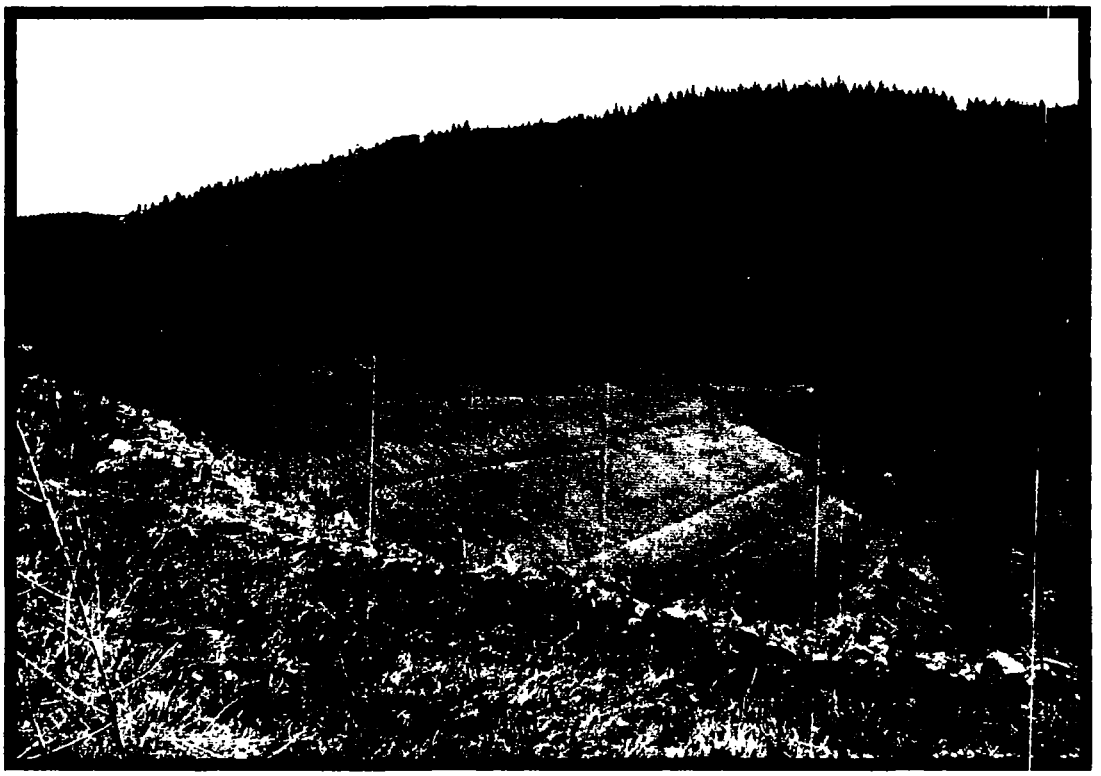
KOOTENAI DEVELOPMENT IMPOUNDMENT DAM

ANNUAL OWNERS INSPECTION REPORT



BILLMAYER ENGINEERING

JAY BILLMAYER, P.E. and KURT HAFFERMAN

MAY 23, 2007

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BILLMAYER ENGINEERING

Memo

To: Robert Merriam, Remedium Group

From: Kurt Hafferman, Billmayer Engineering

CC: Jay Billmayer, P.E.

Date: May 31, 2007

Re: Annual Inspection Report

Enclosed is an advance copy of the annual owner inspection. Please review the report and provide comments. When we have your comments, we will then reprint all the photographs in a higher resolution, number the pages with a type written font and return to you as many final copies as you request as well as send a copy to the Montana Dam Safety Program and finalize the emergency action plan updates.

kh

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Kootenai Impoundment Dam Definitions:

Expansion Joint- A constructed assembly designed to safely absorb the expansion and contraction of concrete

Groin – The place on the right or left side of the embankment where the embankment intersects with the local topography

Piezometer – A small diameter well casing driven vertically in the embankment used to monitor the groundwater level in the embankment

Phreatic surface – The water table or water surface in the embankment where the water pressure is equal to atmospheric pressure.

Spall (spalling, spalled) – Flakes of material that have broken off a larger solid body

V-Notch Weir- Flat plate of either steel or wood with a 90 degree V-notch cut at the top to allow the rate of flow to be measured is a small stream or channel

EXECUTIVE SUMMARY

The annual owner's inspection of the Kootenai Impoundment Dam was conducted May 8th 2007. The dam was found to be in good to excellent condition. No significant structural or maintenance concerns were found that would require immediate action. Routine maintenance items are recommended including brush removal and concrete repair. Additional monitoring stations are recommended in order to start developing a long-term record in preparation for the operational permit renewal. Review of the bank stability and seismic stability are recommended. Tasking projections are as follows;

1. Begin planning the date for the 5-year operational permit renewal inspection.
2. Locate the piezometers and drain outlets with a GPS unit and re-plot the locations on the site map.
3. Clean the outlet side of all the toe drains
4. Hire a contractor to grade the crest, remove brush, and mark piezometers.
5. Establish flow measurement sites below the drain outlets to correlate individual drain flow and piezometer levels.
6. Establish a staff gauge in the drain outlet channel and monitor total flow.
7. Repair concrete in the box culvert and open chute spillway.
8. Map and monitor cracks in the concrete box culvert and open chute spillway

The tasks and estimated costs are listed below:

TASK	RESPONSIBLE PARTY	ESTIMATED COST
GPS Locations	Billmayer Engineering	$800
Clean Outlet Drains	Chapman Construction	$200
Grade Crest and Remove brush	Chapman Construction	$1,000
Flow Measurement Sites	Billmayer Engineering	$1,200
Repair Concrete	Billmayer/Chapman	$1,500
Map and Monitor Cracks	Billmayer Engineering	$2,500

INTRODUCTION

The Kootenai Development Impoundment Dam is an earthen tailings impoundment dam located in the NW ¼ of Section 22 in Township 31 North, Range 30 West in Lincoln County, Montana. The dam is located at the confluence of Rainy Creek and Fleetwood Creek, which are tributary to the Kootenai River.

On Tuesday May 8th, 2007 Billmayer Engineering made an annual owner inspection of the Kootenai Development Impoundment Dam. Those in attendance were Jay Billmayer P.E., and Kurt Hafferman, both from Billmayer Engineering, Jeff Robertson from Chapman Construction, and Robert Marriam and Robert Medler from the Remedium Group. The Kootenai Development

Impoundment Dam is located on a US EPA Superfund site and access to the dam is restricted. The on site hazard is asbestos. All personnel involved in this inspection are 40 – hour HAZWOPER trained, are medically monitored, are medically certified to wear respirators, and have all been fit tested for appropriate respirators.

The purpose of the inspection was to provide a routine annual owner's inspection of a high hazard dam, to maintain accurate records of the conditions of the dam, and to prepare for the Periodic Owners Inspection required to comply with the Operational Permit renewal due which is due before May 25th, 2009. The Operational Permit renewal and Periodic Inspection will follow the guidelines of Montana Code Annotated §85-2-212 and §85-2-213, Periodic Inspections, and the specific rules in Administrative Rules of Montana 36.14.601 Periodic Owner Inspections.

HAZARDOUS WASTE AND EMERGENCY OPERATIONS (HAZWOPER) PLAN

The HAZWOPER Project manager for this site inspection was Jay Billmayer, the Field Leader and Health and Safety Officer was Kurt Hafferman, the decontamination supervisor and field assistant was Jeff Robertson and the Command Post Supervisors were Robert Marriam and Robert Medler. Site security was provided by the US EPA at the entrance to the project. The site map and HAZWOPER site work zones prepared by Billmayer Engineering prior to entry is shown in Exhibit 1, page E1. The project required Level C Personal Protective Equipment (PPE) to gain access to the site. The PPE equipment used was North Full Face® respirators with P-100 filters (purple), double layer Tyvek® suits with Tyvek® booties, cotton glove liners with rubber outer gloves and rubber over booties. A photograph of the field team at the edge of the exclusion zone is shown on page E1-2. The photograph does not include Jay Billmayer as he was taking the photograph.

SITE INSPECTION

Reservoir

The tailings impoundment and reservoir was built to provide for settlement of the fine tails produced by the beneficiation process to recover and reuse water from the mine (Foster 1981; Boettcher, 1963; Lewis 1971). The dam was designed and constructed in stages, with the 50 foot high (elevation 2830) starter dam constructed in 1971 and additional construction phases in 1975, 1977, and 1980 raising the top of the dam to elevation 2926 for a total height of 135 feet measured from the downstream toe (Parker and Hudson, 1992). Since 1990 the tailings impoundment has not received fine tails directly from the operations, however small amounts of tailings continue to enter the reservoir through natural erosion, primarily from surface runoff (Parker and Hudson 1992). In 1992 Schafer and Associates of Bozeman, Montana completed a flood routing analysis and recommended that the best method to safely pass a design storm of a 0.5 PMF in a stable manner, while assuring the long-term integrity of the dam was to route the storm through the impoundment reservoir using the storage capacity and the controlled outflow structures that are in place today (Parker and Hudson, 1992). The reservoir at present does not appear to have filled in with tailings much beyond that reported by Shaffer and Associates in 1992. There was water in

the reservoir to within about 600 ft. of the dam on the date of the inspection, some of which is attributed to the seasonal snow melt runoff from the upstream drainage basin. The water was about two feet deep at piezometer P-O. There was nothing unusual noted in the reservoir or on either side of the reservoir, near the dam or in the drainage above the reservoir. A photograph of the reservoir is shown on page E3-4. The slope on the left side of the reservoir was noted as being fairly steep and appears to be composed of mainly unstable tailings. A photograph of the slope is shown on page E3-9.

Piezometers:

All piezometers were located and a reading was obtained from each one except P-O, as discussed below. The piezometer readings from the May 8th inspection were transposed to an Excel spreadsheet and are shown on page E2-14. Piezometers P, P1, P3, PM4, PM5, and PM6 were noted as dry. These piezometers have been noted as being dry in all other readings provided to Billmayer Engineering. Piezometers P4, P5, and PM3 were reported to have water in them but there was less than 0.10 ft. difference between the bottom of the piezometer and the free water surface and it is assumed that this is most likely rain water, minor seepage or other accumulations of water not related to the phreatic water surface in the embankment. These piezometers have been reported as being dry or as having less than 0.10 ft. of water depth in all other previous readings. Piezometer P-O is located approximately 300 ft. northeast of the crest in the reservoir and was found to be a 2-inch PVC casing with two ¼-inch PVC tubes inside the casing. It is assumed that these require an air pump and pressure gauge to be able to obtain a reading and they were not read on the day of this inspection.

Piezometers P2, PM1, PM2, and A8 were the only piezometers that seemed to have water in them that is related to the phreatic water surface in the dam. The fluctuations of the phreatic water surface in these piezometers, graphed over the time they have been recorded is shown on page E2-15a, E2-15b, and E2-15c. The plot of the phreatic surface in the embankment at each of these piezometers based on the May 8th phreatic surface is shown on page E2-15d and the data for this plot is shown on page E2-15e.

A copy of all the previous piezometer readings is shown on pages E2-16 to E2-60
The section of the Piezometer casings that are above ground were in good condition and all of the piezometer casings were open and unobstructed to the bottom. Photographs of piezometers P1, P3, and P4 are shown in Exhibit 3, page E3-3, E3-7 and E3-8.

Spillways

Earthen Auxiliary Spillway:

An earthen auxiliary spillway is located in the right side of the dam and crosses the embankment. The entrance, channel across the crest and the section immediately downstream of the crest were inspected and found to be in good condition. The channel is generally lined with earth and rock, appears in good condition, is stable and does not show any signs of erosion.

Concrete Box Culvert and Chute Spillway

The concrete box culvert and concrete chute spillway are located on the left side of the dam. The entrance to the concrete box culvert starts in an excavated channel on the left side of the reservoir and is approximately 600 feet long and begins in the reservoir due north of the concrete box culvert. There was water running in the entrance channel and in the box culvert on the day of the inspection. The water depth in the excavated channel averaged 1 foot in depth. The excavated channel has a bottom width of approximately 8 feet and the side slopes were estimated to be 2H to 1V and is approximately 6 foot deep. Approximately 300 feet from the entrance to the box culvert is a trash rack, which is made up of 13 – I-beams driven vertically into the soil. A photograph of the trash rack and channel is shown in Exhibit 3 page E3-11. The trash rack was in good condition, there are no signs of deterioration of the metal and there was no accumulation of trash.

The earthen channel leads to the entrance of the box culvert. The entrance is shown on page E3-12. The water depth flowing in the box culvert was approximately 0.05 feet on the day of the inspection. The entry to the box culvert was noted as being in good condition with riprap protection on both sides. There were two large rocks that had rolled into the left side of the entry channel to the box culvert as shown on page E3-15. There was a 6-inch long piece of concrete that had been broken off of the lip of the entry at the invert of the box culvert as shown on page E3-14.

The inside of the box culvert was inspected from the entrance to the exit. In previous inspection reports it was noted that there is a crack in the invert of the culvert that runs the full length of the culvert. The crack has been previously noted as being 1/16-inch wide. The crack was also noted in this inspection and was found to be $1/16^{th}$ of an inch at the entrance but had widened to $1/8^{th}$–inch by the first transverse expansion joint and was noted as being approximately $1/4^{th}$ –inch by the middle of the pipe and was back to $1/8^{th}$-inch at the exit of the pipe. Photographs of the crack are shown on pages E3-16 to E3-22. At the first transverse expansion joint it was noted that there was also a crack approximately 3-inches upstream of the joint, perpendicular to the flow, completely across the floor. A photograph of the crack is shown on page E3-18. At the second transverse expansion joint, the vertical joint on the right side was missing joint sealing material from the bottom 6-inches. A photograph of the missing material is shown on page E3-21.

Soundings of the concrete floor, walls and ceiling were made with a small hammer at random points in the culvert. No soft spots, unusual densities, or other sound anomalies were noted. No other defects or concerns were noted in the box culvert.

Open Concrete Chute Spillway

The open chute spillway was inspected from the outlet of the box culvert to the top of the steep section of the chute. Photographs of the open chute and steep open chute section are shown on pages E3-23 to E3-29. The open chute was in good condition over most of the length. There are some $1/16^{th}$ inch cracks in the left sidewall that run vertically from the top to the bottom and appeared to be either settlement cracks or may be sidewall load cracks. They appeared at unequal intervals along the wall and were only noticed on the left side. A photograph of one of the cracks is shown on page E3-24. It was also noted that there were several different sections on the top of the open chute walls where pieces of the wall top had spalled or cracked off. Most of the pieces

were small, less than 6 inches in length, but one was about 1 foot long and one foot tall. As they all appeared at the wall top it was assumed that they may have been freeze-thaw spalling caused by the fill outside the wall being to the top of the wall and vegetation growing over the wall and holding moisture in the wall top that then freezes in the winter. A photograph of the larger spalled piece is shown on page E3-25.

It was noted in the field inspection that the bottom of the walls at the wall to floor joint tended to fluctuate in and out but it was determined that these were construction defects and were not from settlement or deflection after construction. This defect was noted in most of the wall sections.

A photograph of the steep section of the open chute is shown on page E3-26 and E3-27 as taken from the top of the spillway and on page E3-29 taken from the bottom. As there was water running in the spillway and algae on the floor, for reasons of safety, the chute was not inspected. The chute appeared to be in good condition and no cracks, displacements or anomalies were noted as observed from the top or bottom of the spillway.

Dam Crest

The crest of the dam was inspected from the right to the left side. There was no misalignment, bulges or depressions noted in the crest. There were some small cottonwoods growing on the upstream edge of the crest near the middle of the embankment, otherwise there was no other vegetation growing on the crest that was of concern. A photograph of the upstream edge of the crest from the right side looking to the left side is shown on page E3-5 and a photograph taken from the reservoir looking southwest is shown on page E3-10. A small berm, approximately 1 foot high, running the length of the crest, was notice on the upstream face. It was also noted that there were two areas on this berm where there were piles of rocks and debris that had been dumped on the crest on the upstream edge in random piles.

Upstream Face

The upstream face of the dam was inspected from the right to the left side. There was no misalignment, bulges or depressions noted in the upstream face. There are a number of small cottonwoods, a couple of small pine trees, and some weeds growing all along the upstream face of the dam. A photograph of the upstream face of the dam from the right side looking to the left side is shown on page E3-5, a photograph taken from the reservoir looking southwest is shown on page E3-10, and a photograph looking from the left side to the right is shown on page E3-8.

Downstream Face

The downstream face was inspected by walking each of the lift lines on the face. There was no misaligned sections, no bulges, cracks or significant erosion noted anywhere on the downstream face. There are some small cottonwood trees growing on the face of the first lift as shown on page E3-32. There is also one small erosion channel noted on the top of the first lift adjacent to the left groin as shown on page E3-33. The erosion may be associated to a drain that is also located in the left groin on top of the lift just to the left of the erosion channel and may have been caused by possible plugging of the open drain. The entrance to the drain is shown on page E3-31. As shown

in the photograph, the drain does not have a grate on the top and it was assumed that the drain might plug with debris and from time to time and that may cause water to run down the face of the first lift but there were no clear signs that the two areas are directly related.

Toe Drains

The following toe drains were located and inspected:

2-12-inch corrugated metal pipes in the left groin. The photograph of the flow channel below the drains, looking upstream, is shown on page E3-34. Both drains were running water. Both drains were covered with vegetation and had moss and algae in around the exit and in the channel below the drains.

8-inch concrete pipe, with the bell end sticking out, in the left side, approximately 50 feet from left groin. The drain was flowing water, nearly full. The end of the drain is covered with moss and algae. The photograph of this drain is shown on page E3-35.

12-inch corrugated metal pipe, in the left side, just below and to the right of the 8-inch concrete pipe. There is low flow from the pipe. The pipe end is covered in moss and algae. The photograph of this pipe is shown on page E3-36.

12-inch steel pipe projecting from face of the embankment approximately 3 feet, near the center of the embankment. The pipe was running water and the depth of the water was measured at 0.21 feet deep. A calculation of the flow using Flowmaster® was 340 gpm. A copy of the Flowmaster® data is shown in Exhibit 4 page E4-1. The pipe had a free discharge into the channel below the pipe. No flow was noted around the outside of the pipe. A photograph of the pipe is shown on page E3-37.

8-inch concrete pipe on the right side of the embankment approximately 50 feet from the right groin at the toe. This drain was flowing about $1/3^{rd}$ full and is flowing freely into the channel below the pipe. A photograph of the end of the pipe is shown on page E3-39.

A flow measurement was taken in the channel that forms below all of the drains at a location where all of the flow from the drains is collected. The flow was measured using a Marsh McBirney® Flow meter to get the velocity and a fiberglass tape used to get the incremental widths. The flow was taken at a location where it was assumed that all of the drain flow had collected. The flow in the channel was calculated to be 3.48 cfs (1,563 gpm). A copy of the measurement data taken in the field is shown on page E4-3 and the Flowmaster® data for the channel is shown on page E4-4.

Downstream Toe

The area downstream of the main embankment was inspected. The area is heavily vegetated but there were no obvious signs of unusual seepage, no signs of bulges or displaced material and no other concerns or anomalies were noted.

RECOMMENDED MAINTENANCE AND MONITORING

Emergency Action Plan: The Emergency Action Plan was last updated in February 2007. There are already name and telephone number changes that need to be made and the pages to be changed with the necessary changes highlighted and marked are included in Exhibit 5, page E5-1 to E5-6. Billmayer Engineering will complete this project with the submittal of this report to the Montana Dam Safety Program.

Operational Plan: The piezometer locations as shown on the "Recommended Piezometer Locations" Plate 1 from Harding Lawson September 1992 report, were not found to be in the exact locations shown on the map. A new map should be developed showing the exact location of each of the piezometers, as well as each of the drain outlet locations. It is recommended that the locations should be obtained using a GPS unit and then plotted on a new map. This project should be completed during the summer of 2007.

Reservoir: The slope on the left side of the reservoir should be checked in the event of any seismic activity in the area greater than magnitude 5.0.

Crest: The piles of material that have been placed on the upstream edge of the crest should be removed and the upstream crest should be re-graded. The piles interfere with a visual alignment of the upstream crest and in the event of overtopping could be areas where down cutting could begin rather than allowing sheet flow across the crest to occur. All of the small trees and weeds should be removed from the crest to prevent seepage paths from developing at the roots and to prevent rodents from using the trees as locations to burrow into the crest. This project should be completed during the 2007 summer.

Upstream face: All of the vegetation should be cleaned off the upstream face. As is with the crest, tree roots are places where seepage paths can develop and rodents will use the trees as locations to start burrows into the crest. This project should be completed before the end of the 2008 summer.

Piezometers: All of the vegetation should be cleaned away from around the piezometers so that they can be more easily located. To assure that water is not seeping down the sides of the piezometer casings, it is recommended that the top two to three feet of topsoil should be dug out around the top of the casing and they should be repacked with bentonite and soil. Each of the piezometers should be painted with orange paint and a metal tag should be attached to each piezometer with the piezometer number shown on the tag. This project should be completed before the fall of 2007 in preparation for the 2008 inspection.

Earthen Channel and Trash Rack above the Concrete Box Culvert: The trash rack should be checked for debris each year after runoff occurs and any time a major storm event moves through the area. All accumulations of debris that block more than 20% of the channel conveyance should be removed. Debris on the trash rack may cause water to impound behind the rack and may wash out the entrance channel if it the trash rack is overtopped.

Concrete Box Culvert:

Entrance: The rocks at the entrance to the box culvert should be removed and the riprap on both sides should be stabilized. Rocks in the entrance may be washed into the box culvert in a major storm event and the tumbling action in the box culvert, open channel chute and steep chute sections may cause serious damage to the floor or walls of the spillway. The broken piece of concrete at the entrance should be saw cut and repaired. Further deterioration of the lip of the entrance may expand and may allow seepage to occur under the culvert floor. This project should be completed before the fall of 2007.

Centerline Crack: The centerline crack should be mapped and the width carefully measured to assure that the width is not changing. In addition is appears that the floor of the culvert may have a slight crown in the center (estimated in the field as ¼ inch maximum). The centerline crack may serve as relief for water that seeps down the outsides of the box and comes up under the floor, it may be a freeze thaw crack, or it may be differential settlement at the location of maximum bending moment in the floor. An accurate survey of the floor cross section at two or three locations in the culvert may provide a better answer and may determine the amount of deflection and will provide a baseline for future monitoring. This project should be implemented during the summer of 2007 so that crack width monitoring results can be included in the operational permit renewal report.

Transverse Crack above first expansion joint: The transverse crack at the first expansion joint is indicative of possible settlement of the first section of the box culvert. The location of this crack should be mapped and it should be monitored for movement and width changes. This project should be implemented during the summer of 2007 so data can be included in the 2008 operational permit inspection report.

Expansion Joints: The expansion joint material in the transverse expansion joints should be scraped or ground out, cleaned well, and re-caulked with a SikaFlex® or other concrete crack repair type caulk product. The material missing from the vertical joints on the right side, as shown in photograph E3-21, should also be cleaned and replaced. Water flowing in the culvert can enter these cracks and can be a freeze thaw problem in the winter. This project should be completed before the fall of 2008.

Concrete Chute Spillway:

Transverse Cracks in Side Walls: The transverse cracks in the left sidewalls occur frequently enough that they are probably indicative of either movement of the earth on the left side or water collecting and possibly freezing behind the wall. The cracks should be mapped for location and the crack width should be monitored. This project should be completed before the fall of 2008.

Spalled Sections: The larger piece of concrete that has spalled off of the right sidewall should be saw cut, cleaned and repaired. Some of the smaller sections should be monitored and repaired if they get worse. This project should be completed before the fall of 2007.

Open Chute: The earth next to the open chute spillway should be re-graded so that the wall tops are above the local grade at least 3 to 4 inches so that water will not collect on the wall tops and that weeds and plants that grow next to the walls have less of a chance to hold moisture on the wall tops and allow freeze thaw damage to occur. The ground next to the wall tops should be re-graded so that water flows away from the walls rather than toward the walls and down the sides. A sketch of the grading is shown on page E5-7. This project should be completed before the fall of 2008.

Steep Chute: The steep chute should be inspected in the fall when water quits running in the spillway. The small trees shown in photograph E3-30 should be removed from the riprap-lined chute below the concrete spillway any time they start to grow higher than 1 to 2 feet tall. The trees will displace the riprap and leave gaps where high flow water can move and displace the rock. This project should be completed before the fall of 2007.

Downstream Face: The downstream face is in good to excellent condition. The small cottonwoods shown in photograph E3-32 should be removed before the fall of 2008. The drain shown in photograph E3-31 should be cleaned around the edges so that trash and debris can easily move through the entrance. A top hat grate may need to be installed to keep debris out of the culvert. A picture of a top hat grate is shown on page E5-8. It should be inspected each time someone is on site to be sure it is free flowing.

Toe Drains: The outlet side of each of the toe drains should be cleaned so that they are free flowing and there is not backwater created by moss, algae or weeds. Backwater in the drains may cause a higher phreatic water surface to form in the embankment. The drains should be cleaned as soon as possible so that the phreatic surface can re-adjust before the next monthly piezometer readings.

Monitoring:
The piezometers should continue to be monitored and recorded on a monthly basis.

Small V-notch weirs should be installed on the three left groin drains and on the right 8-inch concrete culvert drain and they should also be monitored each time the piezometers are monitored. The V-notch weirs below the drains should be installed as soon as possible so that monitoring of the drain flow can be tied to the piezometer data.

The depth of water (or the distance from the top of the pipe to the water surface) in the large 12-inch steel drain should be measured each time the piezometers are read. A rating table for the different depths of water in the pipe is shown on page E4-2.

A staff gauge should be placed in the channel where all of the flow collects. A preliminary rating table was developed from the one flow measurement that was made and is shown on page E4-5 and a graph of the stage versus discharge shown on page E4-6. A staff gauge should be set at the flow measurement location and the staff gauge monitored each time the piezometers are measured. Additional flow measurements should be made in the channel at the staff gauge at least three more times to calibrate the staff gauge and a flow measurement should be taken at each annual

inspection as a minimum. The staff gauge should be installed as soon as possible so that monitoring of the drain flow can be tied to the piezometer data.

The cracks in the concrete floor of the box culvert should be mapped and should be measured at fixed locations at each annual inspection.

The width of the cracks in the left side of the open chute spillway should be measured and the crack locations should be mapped. The cracks should be monitored at each annual inspection.

CONCLUSIONS

A copy of the Routine Inspection Report, filled out immediately following the May 8th inspection is shown in Exhibit 2 pages E2-1 to E2-5. A copy of all of the field notes taken on the day of the inspection is shown on pages E2-6 to page E2-13. The sections above provided the additional detail to the Routine Inspection Report and the field notes taken on the day of the inspection.

The conclusion of Billmayer Engineering is that the overall condition of the Kootenai Development Impoundment Dam is good to excellent. This firm has determined that there are no significant structural or maintenance concerns that will require immediate action in order to assure a safe project. Some of the additional monitoring stations are recommended for immediate action in order to start developing a long-term record in preparation for the operational permit renewal, but they are not required to assure a safe structure.

The existing emergency action plan, operational plan, routine maintenance plan and piezometer monitoring logs are up to date and effectively address the structure and its components. There are suggestions made to improve the routine monitoring but none of the plans require any immediate updates. There are some telephone numbers and names that need to be updated in the emergency action plan and those changes are addressed above and will be updated with the Montana Dam Safety Program.

Preparation for the 5-year operational permit renewal inspection should be conducted no later than the fall of 2008. In preparation for that inspection and report, Billmayer Engineering recommends that a complete catalog of all the available documentation and reports that are available on this project be developed. We also recommend a complete review of the stability analysis based on the latest piezometer data, and a review of the seismic stability of the embankment based on the new Montana Dam Safety Seismic standards for high hazard dams in Montana should be completed.

EXHIBIT 1

SITE MAP
HAZWOPER ZONES

E1-1 – MAP
E1-2 SITE INVESTIGATION TEAM

W. R. Grace / Rainy Creek Project
Tailings Impoundment

Legend

- Clear Weather Breach Flood Inundation Boundary
- Storm-Induced Breach Flood Inundation Boundary
- (2.60) Distance Downstream From Tailings Dam(miles)

Scale : 1"=1,500'

Mile 0.00 (Tailings Dam)

	Maximum Discharge (cfs)	Time to Max Discharge* (cfs)
Clear Weather Breach	7,200	0
Storm Induced Breach	16,900	0

Mile 2.60 (Highway 37)

	Maximum Discharge (cfs)	Time to Max Discharge* (hr)	Max Stage (ft above streambed)
Clear Weather Breach	7,000	0.25	~ 8
Storm Induced Breach	16,300	0.20	~ 9

Beyond this point, the breach flood flows fall below the 100-year flood flow of the Kootenai River.

* Time to Maximum Discharge is measured from the time the peak flow occurs at the dam to the time that the peak flow reaches a location downstream.

RAINY CREEK

LIBBY 3.5 mi.

Figure B-3

Color Photo(s)

The following pages contain color that does not appear in the scanned images.

To view the actual images, contact the Region VIII Records Center at (303) 312-6473.

SITE INSPECTION TEAM JEFF ROBERTSON, KURT HAFFERMAN, ROBERT MEDLER, ROBERT MARRIAM
(JAY BILLMAYER TAKING PHOTOGRAPH)

EXHIBIT 2

ROUTINE INSPECTION REPORT E2-1 TO E2-5

FIELD NOTE COPIES E2-6 TO E2-13

MAY 8TH PIEZOMETER READINGS E2-14

PIEZOMETERS P2, PM1, PM2 AND A8 PLOTTED OVER TIME E2-15

ALL PIEZOMETER DATA E2-16 TO E2-60

1/5

E2-1

KOOTENAI DEVELOPMENT IMPOUNDMENT
ROUTINE INSPECTION REPORT

Dam Inspector(s): BELLMAYER ENGINEERING **Inspection Date:** MAY 8, 2007
Reservoir Elevation: UNKNOWN **Weather Conditions:** Clear very warm ≈ 76°

PIEZOMETER READINGS
(See Attached Drawing for Locations)

Piezometer ID	Depth Measured	Water Level	Dry	Piezometer ID	Depth Measured	Water Level	Water Depth From Bottom or Dry
P0	NA		—	PM1	54.80	49.57	(+5.23)
P	98.82		dry	PM2	104.60	96.14	(+8.46)
P1	103.93		dry	PM3	51.80	51.59	(+0.21)
P2	122.10	107.64	(+14.46)	PM4	41.12		dry
P3	60.70		dry	PM5	49.97		dry
P4	106.20	105.24	(+0.96)	PM6	65.69		dry
P5	104.30	103.56	(+0.74)	A-8	28.30	5.22	(+23.08)

FINDINGS			
Inlet Box Culvert	≈1/2" water depth in culvert, rocks in entrance		
Outlet Box Culvert	ok		
Emergency Spillway Inlet	ok clear		
Plunge Pool	ok		
Toe Drains	see notes		
Dam Observations	see notes		
Areas of Concern			
Photos Taken	✓	Yes		No

Signatures [signature]

KOOTENAI DEVELOPMENT IMPOUNDMENT
DAM PERIODIC INVESTIGATION

Dam Name: KOOTENAI IMPOUNDMENT DAM
Dam Observer: KURT HAFFERMAN / JAY BILLMAYER
Observation Date: MAY 8, 2007
Reservoir Elevation: UNKNOW
Weather Conditions: clear, very warm ± 76°

AREA INSPECTED	ITEM NO.	EMBANKMENT CONDITION	OBSERVATIONS	CHECK ACTION NEEDED: MONITOR	INVESTIGATE	REPAIR
CREST	1	SURFACE CRACKING	none			
	2	CAVE IN, ANIMAL BURROW	none			
	3	LOW AREA(S)	none			
	4	HORIZONTAL ALIGNMENT	good			
	5	RUTS AND/OR PUDDLES	none			
	6	VEGETATION CONDITION	none			
	7	upstream edge	some spoil piles, remove			
	8					
UPSTREAM SLOPE	9	SLIDE, SLOUGH, SCARP	none			
	10	SLOPE PROTECTION	none, tailings			
	11	SINKHOLE, ANIMAL BURROW	none noted			
	12	EMB-ABUT CONTACT	good			
	13	EROSION	none			
	14	VEGETATION CONDITION	1"-1½" cottonwoods remove			✓
	15	piezometers	good, clear vegetation			
	16					

ADDITIONAL COMMENTS: REFER TO ITEM NO., IF APPLICABLE

E2-2

KOOTENAI DEVELOPMENT IMPOUNDMENT
DAM PERIODIC INVESTIGATION

Dam Name: Kootenai Impoundment Dam
Dam Observer: Hafferman / Billmeyer
Reservoir Elevation: _____

Observation Date: 5/8/2007
Weather Conditions: clear - very warm 76

AREA INSPECTED	ITEM NO.	CONDITION	OBSERVATIONS	CHECK ACTION NEEDED: MONITOR	INVESTI-GATE	REPAIR
		EMBANKMENT (CONT'D)				
DOWNSTREAM SLOPE	17	WET AREA(S) (NO FLOW)	none			
	18	SEEPAGE	none			
	19	SLIDE, SLOUGH, SCARP	none			
	20	EMB-ABUT CONTACT	good			
	21	CAVE IN, ANIMAL BURROW	none			
	22	EROSION	left side, top of lift #1 (photo # 44)			✓
	23	UNUSUAL MOVEMENT	none			
	24	VEGETATION CONDITION	small brush & trees okay			
	25	REMOVAL OF TREES/SHRUBS (a)	not necessary			
	26					
INSTRUMENTATION	27	PIEZOMETERS/OBSERV. WELLS	good, all found, meas. taken			
	28	STAFF GAUGE AND RECORDER	none			
	29	WEIRS	none			
	30	SURVEY MONUMENTS	none			
	31	DRAIN'S	found all some vegetation/algea clean			✓
	32	FREQUENCY READINGS	monthly from August 2002 to November 2006	✓		
	33	LOCATION OF RECORDS	Billmeyer Engineering — Remedium Group			
	34					

ADDITIONAL COMMENTS: REFER TO ITEM NO., IF APPLICABLE

(a) Trunk diameters larger than 2 inches.

KOOTENAI DEVELOPMENT IMPOUNDMENT
DAM PERIODIC INVESTIGATION

Dam Name: Kootenai

Dam Observer: _____ Observation Date: _____

Reservoir Elevation: _____ Weather Conditions: _____

AREA INSPECTED	ITEM NO.	CONDITION	OBSERVATIONS	CHECK ACTION NEEDED: MONITOR	INVESTI-GATE	REPAIR
		DOWNSTREAM AREA & MISCELLANEOUS				
DOWNSTREAM AREA	35	ABUTMENT LEAKAGE	None noted			
	36	FOUNDATION SEEPAGE	drains			
	37	SLIDE, SLOUGH, SCARP	none			
	38	DRAINAGE SYSTEM	full functioning ± 3.5 cfs	✓		
	39					
	40					
	41	HAZARD DESCRIPTION				
	42	DATE OF LAST UPDATE OF EAP	Feb 2007			
MISCELLANEOUS	43	RESERVOIR SLOPES	good, note steep section on left side	✓		
	44	ACCESS ROADS	good, clear			
	45	SECURITY DEVICES	excellent			
	46					
	47					
	48					
	49					
	50					

ADDITIONAL COMMENTS: REFER TO ITEM NO., IF APPLICABLE

E2-4

KOOTENAI DEVELOPMENT IMPOUNDMENT
DAM PERIODIC INVESTIGATION

Dam Name: Kootenai Impoundment
Dam Observer: Patterson/Bill Meyer
Reservoir Elevation: _____

Observation Date: _____
Weather Conditions: _____

AREA INSPECTED	ITEM NO.	CONDITION	SPILLWAYS OBSERVATIONS	CHECK ACTION NEEDED: MONITOR	INVESTIGATE	REPAIR
ERODIBLE CHANNEL	51	SLIDE, SLOUGH, SCARP	none			
	52	EROSION	none			
	53	VEGETATION CONDITION	some minor, scrub & trees			
	54	DEBRIS	minor			
	55					
	56					
NON-ERODIBLE CHANNEL	57	SIDEWALLS	some minor top to bottom stress cracks 1/16"	✓		
	58	CHANNEL FLOOR	good condition, some joint material missing	✓		✓
	59	UNUSUAL MOVEMENT	none			
	60	APPROACH AREA	good, some rocks in left box culvert ent			✓
	61	WEIR OR CONTROL	trash rack, good no trash			
	62	DISCHARGE AREA	good			
	63	CRACK WIDTH-BOX CULVERT (a)	starts @ 1/16" to ± 1/8" - 1/4" in center			
	64					
DROP INLET	65	INTAKE STRUCTURE	good			
	66	TRASH RACK	See above in weir/control			
	67	STILLING BASIN	good			
	68					
	69					

ADDITIONAL COMMENTS: REFER TO ITEM NO., IF APPLICABLE

(a) Bottom of box culvert through dam.

Kootenai Impoundment Dam

Tuesday May 8, 2007

Clear - warm 70°-76°

Meet @ CDAM @ 10:30

- Fit test respirators

- On site @ 11:30 TYVEK SUIT, etc.

Photographs

1st P. - Crest

Photo jog @ P-0

Photo P2

Photo P3

P looking NW across @ RCS taken from approx ¼ of dam

P - pole. shade area on east side of RCS.

P- trash rack/channel

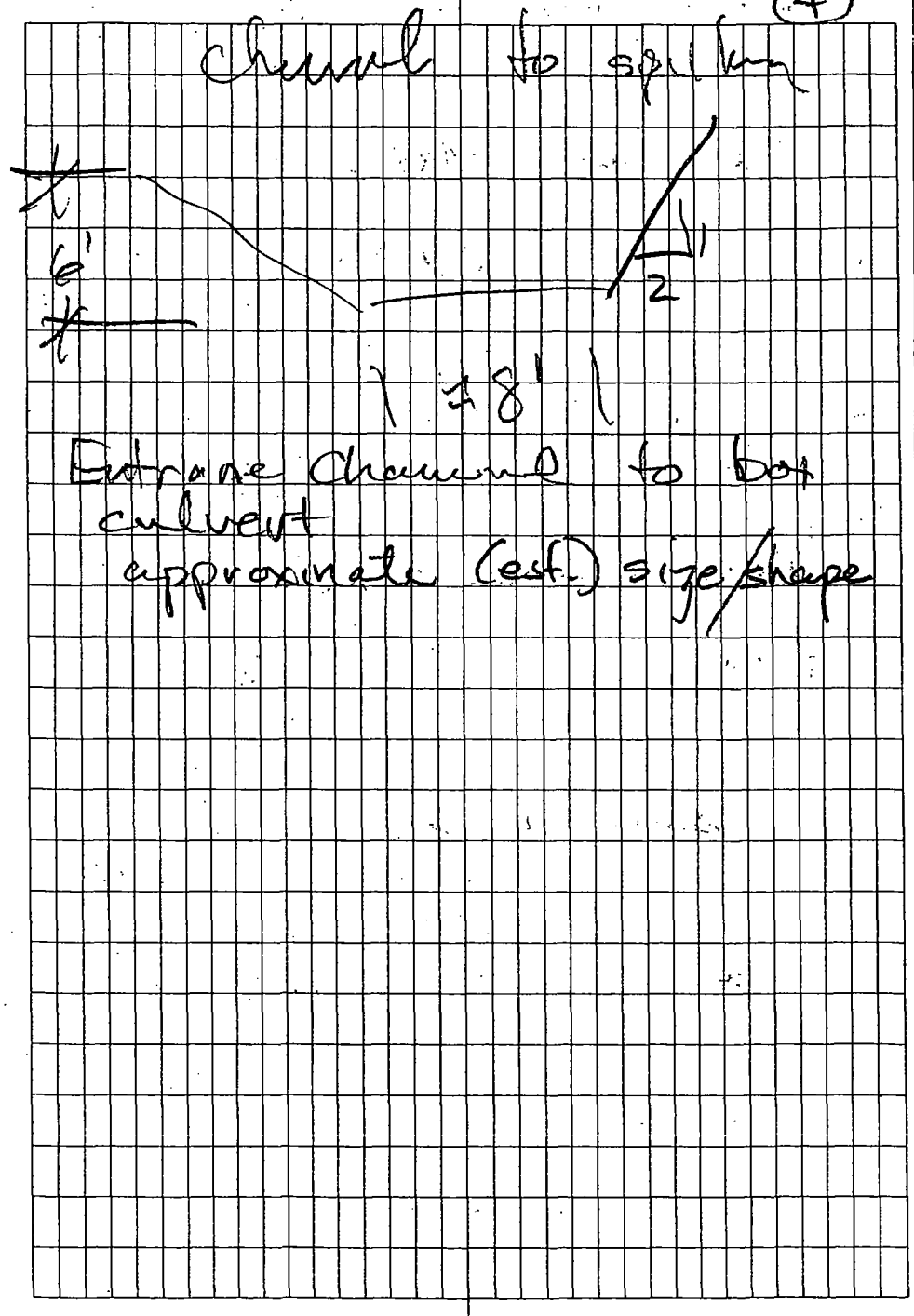
P- looking south today

Pig.	dep. to dry/water	depth to bottom
P0 - Nested tubes, no meas ¼" vinyl		
P1-	98.81 dry	98.82
P1 -	103.93 dry	103.93
P2 -	107.64 water	122.10
P3 -	60.70 dry	60.70
P4-	105.24 water	106.20
P5-	103.56 water	104.30
PM1	49.51 water	54.80
PM2-	96.18 water	104.60
PM3-	51.59 water	51.80
PM4	41.12 dry	41.12
PM5	49.97 dry	49.97
PM6	65.69 dry	65.69

E2-6

- Res has water up to P-0
- Spillway running with
- no debris in spillway ent channel
- dam crest alignment good
- small berm on upstream face, some spall piles
- a couple of rock piles, one right side upstrm
- one ℄ of dam near P3 should be removed for visual observation of upstream crest edge

E2-7



Kootenai Important

P- conc box cut

A- chip on entrance

P- rocks in entrance

Note from Jay:

@ 2nd teir down from top grout casing, horizontal bore w 5° upslope grout on ground 12" casing

E2-8

Box Culvert Insp

Spillway-

crack going from 1/16" @ start of chute to 1/8-1/4" near outlet

J.B.- P-O. —

2" dia PVC casing

2-1/4 cpl poly tube on inside

will req. air pump and press gauge to get meas.

2nd teir, 12" pipe filled w grout

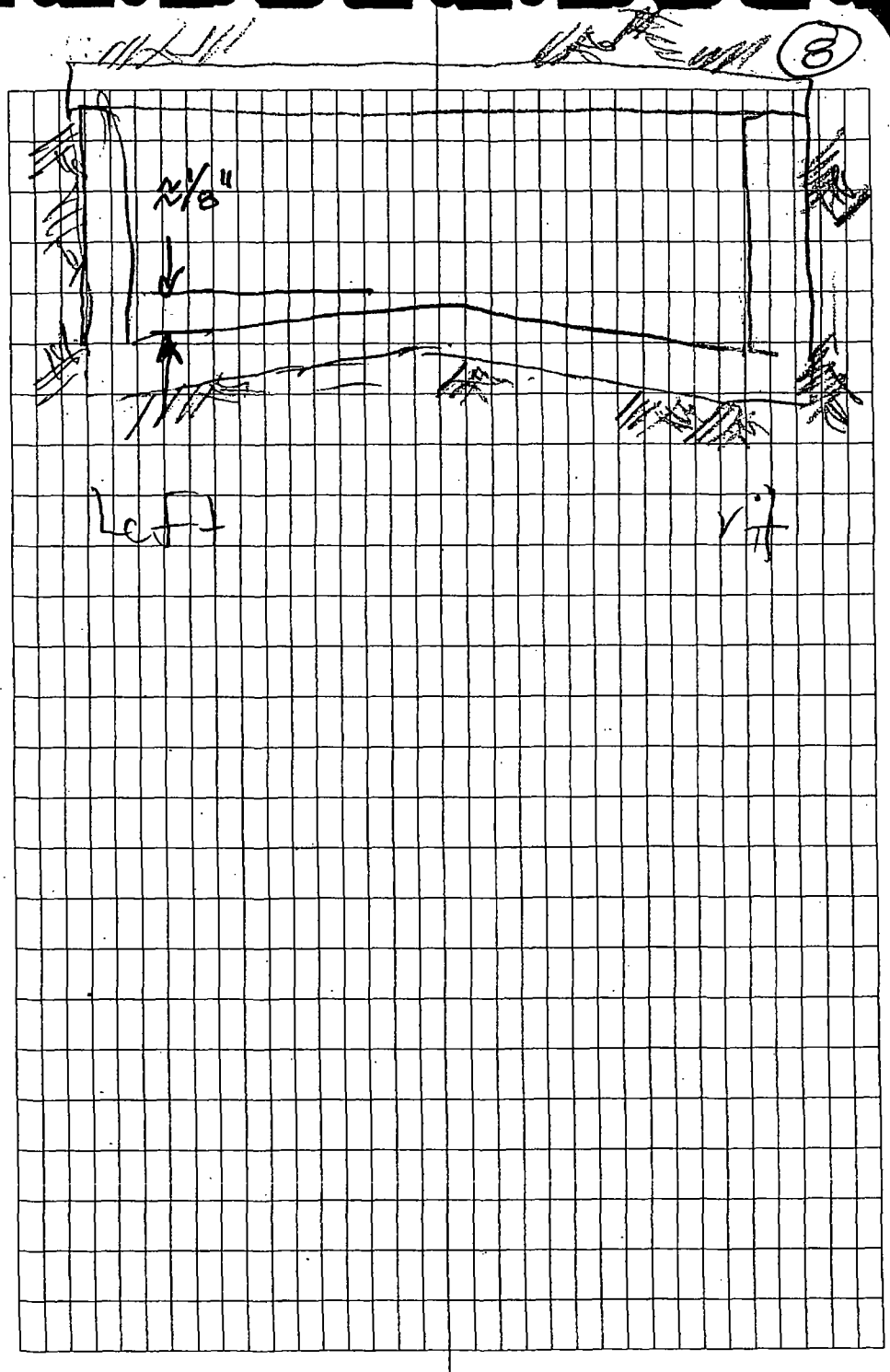
4" in liner inside of 12" steel casing. Grout on pipe and on ground

KDI 5/8/07 (7)

- middle of spillway bottom of spillway appears bowed up slightly
- open chute spillway
  - shows cracks in side walls
- Floor good
- some wobbles at base of chute, const defect.
- some missing chunks out of wall tops
- conc. sound.

E2-9

(8)



KD1

(9)

left grain drains

2 - 12" corrugated

moss algae

8" conc. bell & spigot

leaking @ bell

12" steel, open discharge

highest flow?

8" conc. on right toe

E2-10

(10)

Piez.	depth to	bottom
AB	5.22 wat	28.30 ft

(11)

Conc. chute spillway

- plunge pool good, trees gone some displaced riprap

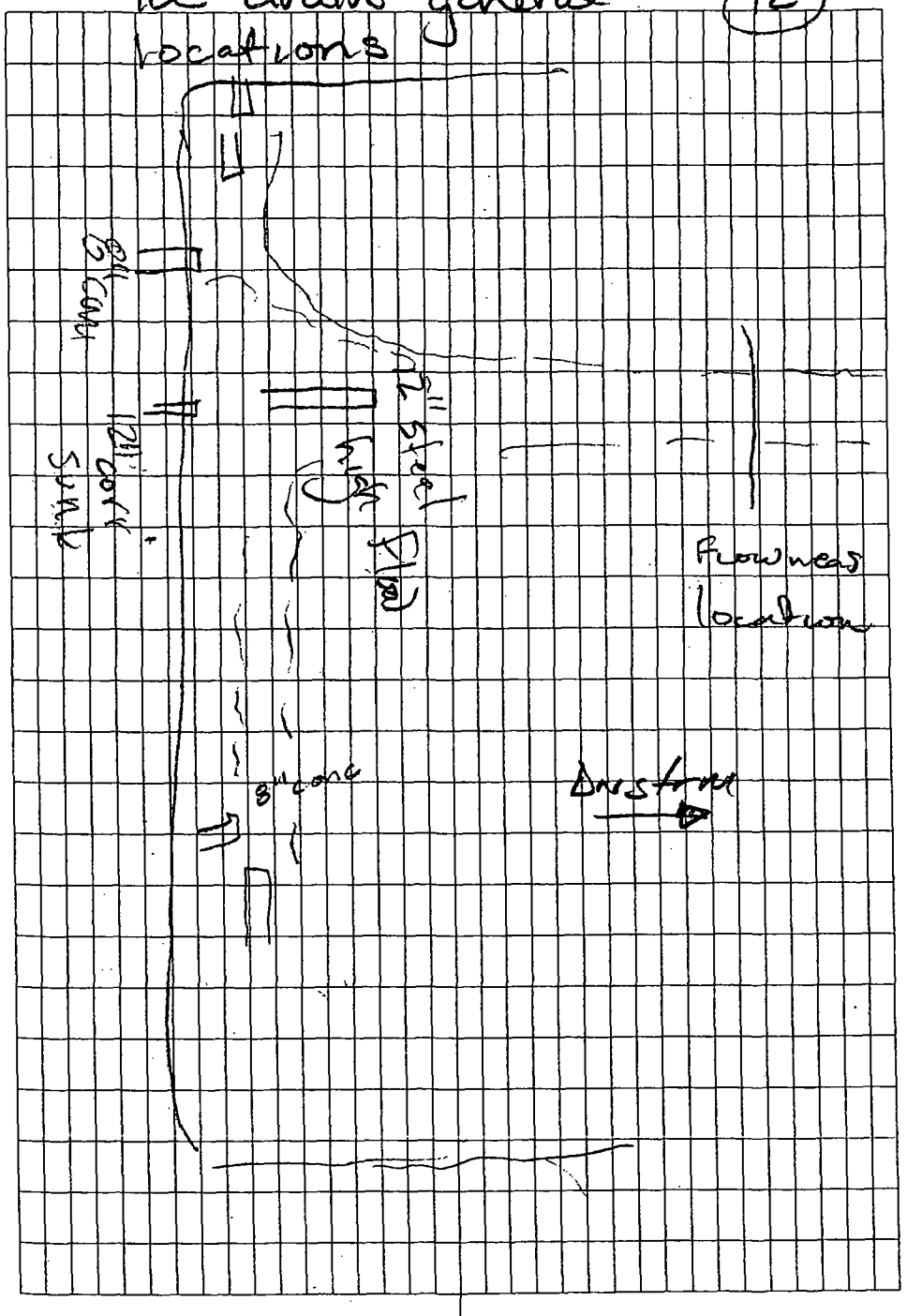
- some small cottonwoods in riprap channel wells stable

- culverts @ end of toe drain channel good, right one dry

- intersection of chute and toe drains good, stable

(12)

Toe drain general locations



IDE Drain Discharge (13)

DIST	wid.	dep	Area	V	Q
0.5	0.25	0	0		
1.0	0.50	0.30	0.15	1.0	0.15
1.5	0.50	0.60	0.30	1.36	0.41
2.0	0.50	0.70	0.35	2.78	0.97
2.5	0.50	0.80	0.40	1.70	0.68
3.0	0.50	0.70	0.35	1.26	0.44
3.5	0.5	0.70	0.35	1.17	0.41
4.0	0.75	0.50	0.38	1.13	0.42
5.0	0.50	0		0	0
				V_{avg} 1.49 ft/s	3.48 cfs
4.5	4.5				
	✓				1,563 gpm

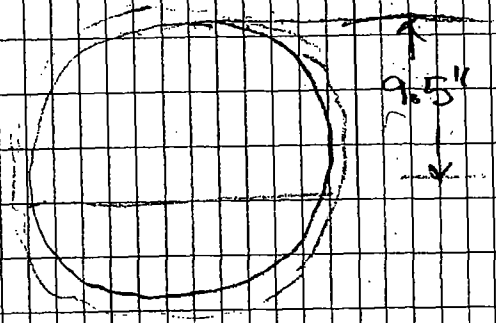
E212

14/14

12" Pipe discharge

dWS - 9.5 inches

V = 6.20 ft/s



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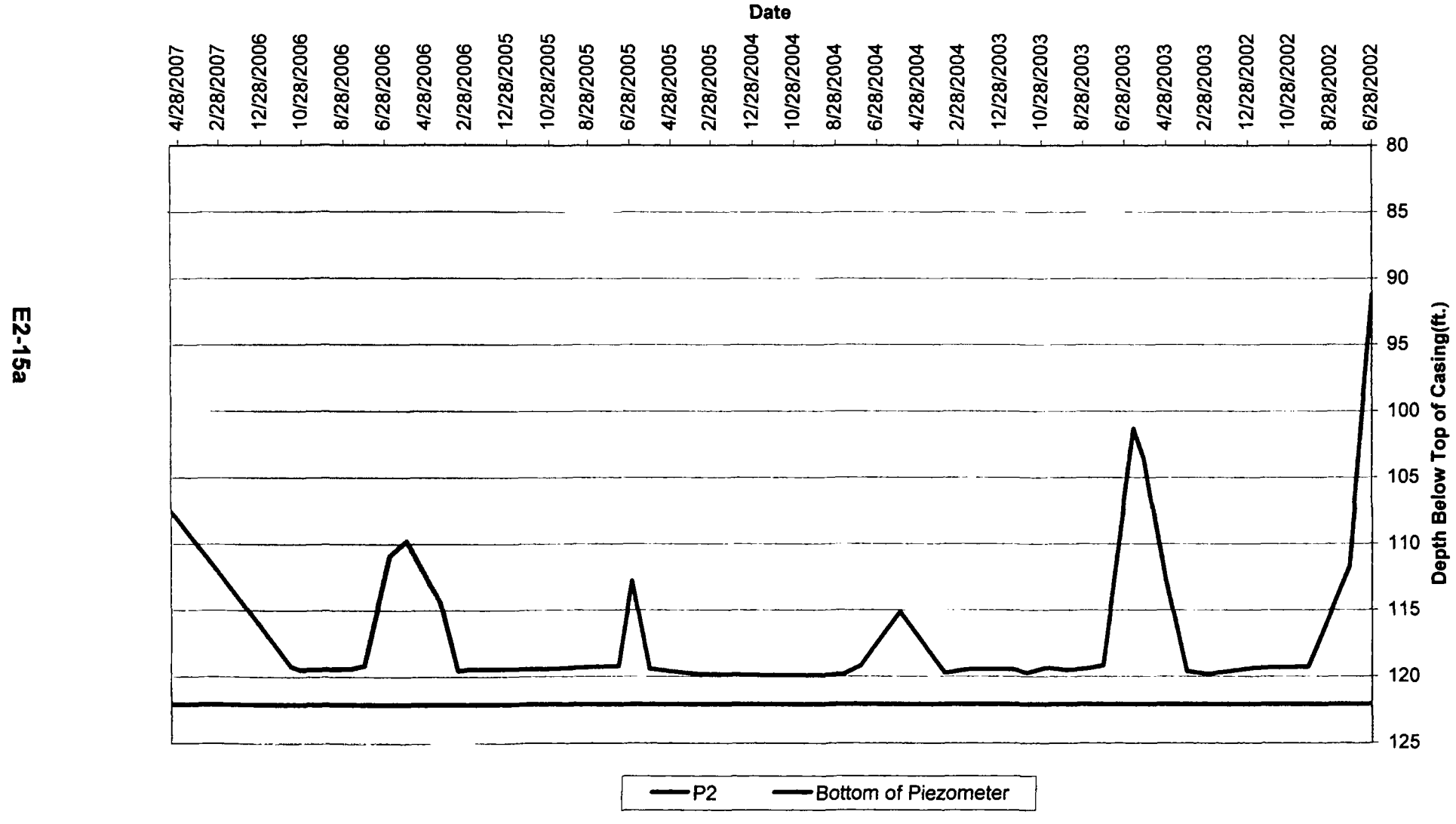
Billmayer Engineering
Kootenai Impoundment Dam Annual Inspection
23-May-07
Hafferman
May 8th, 2007 Piezometer Data

Piezometer Number	DISTANCE TO WS	TOTAL DEPTH	WET	DRY	WATER COLUMN DEPTH
P-O	NA	NA			
P1		103.93		DRY	
P2	107.64	122.1	WET		14.46
P3		60.7		DRY	
P4	105.24	106.2	WET		0.96
P5	103.56	104.3	WET		0.74
PM1	49.57	54.8	WET		5.23
PM2	96.18	104.6	WET		8.42
PM3	51.59	51.8	WET		0.21
PM4		41.12		DRY	
PM5		49.57		DRY	
PM6		65.69		DRY	
A8	5.22	28.3	WET		23.08

Billmayer Engineering
Kootenai Impoundment Dam Annual Inspection
23-May-07
Hafferman
Wet Piezometer Plots

Piezometer	P2		PM1		PM2		A8	
Date	DW	TD	DW	TD	DW	TD	DW	TD
5/8/2007	107.64	122.1	49.57	54.8	96.18	104.6	5.22	28.3
11/14/2006	119.21	122.1	51.88	54.8	102.72	104.6	7.96	28.3
10/30/2006	119.48	122.1	51.82	54.8	103.69	104.6	7.92	28.3
8/16/2006	119.39	122.1	51.72	54.8	103.51	104.6	7.72	28.3
7/28/2006	119.14	122.1	51.61	54.8	103.32	104.6	7.42	28.3
6/21/2006	110.89	122.1	51.23	54.8	101.62	104.6	6.18	28.3
5/27/2006	109.78	122.1	50.76	54.8	98.92	104.6	4.98	28.3
4/7/2006	114.34	122.1	51.14	54.8	99.79	104.6	4.96	28.3
3/12/2006	119.52	122.1	51.62	54.8	103.39	104.6	6.18	28.3
2/24/2006	119.44	122.1	51.95	54.8	103.79	104.6	7.92	28.3
10/27/2005	119.41	122.1	51.94	54.8	103.76	104.6	7.81	28.3
9/10/2005	119.32	122.1	51.84	54.8	103.66	104.6	7.76	28.3
8/27/2005	119.3	122.1	51.78	54.8	103.14	104.6	7.68	28.3
7/14/2005	119.22	122.1	51.74	54.8	103.46	104.6	7.28	28.3
6/24/2005	112.79	122.1	51.68	54.8	103.29	104.6	6.22	28.3
5/29/2005	119.42	122.1	50.92	54.8	103.01	104.6	5.91	28.3
4/10/2005	119.7	122.1	51.72	54.8	103.32	104.6	5.42	28.3
3/19/2005	119.82	122.1	51.82	54.8	103.49	104.6	7.79	28.3
2/13/2005	119.86	122.1	51.87	54.8	103.54	104.6	7.86	28.3
11/19/2004	119.9	122.1	51.91	54.8	103.59	104.6	7.96	28.3
10/17/2004	119.89	122.1	51.84	54.8	103.52	104.6	7.91	28.3
9/24/2004	119.91	122.1	51.81	54.8	103.49	104.6	7.82	28.3
8/17/2004	119.84	122.1	51.79	54.8	103.34	104.6	7.79	28.3
7/22/2004	119.21	122.1	51.72	54.8	103.29	104.6	7.42	28.3
6/18/2004	116.8	122.1	50.69	54.8	102.14	104.6	7.01	28.3
5/25/2004	115.14	122.1	50.95	54.8	101.34	104.6	6.55	28.3
3/19/2004	119.74	122.1	51.68	54.8	101.46	104.6	7.8	28.3
2/12/2004	119.45	122.1	51.82	54.8	103.52	104.6	7.8	28.3
12/10/2003	119.44	122.1	51.86	54.8	103.54	104.6	7.91	28.3
11/19/2003	119.72	122.1	51.84	54.8	103.59	104.6	7.9	28.3
10/21/2003	119.32	122.1	51.84	54.8	103.54	104.6	7.94	28.3
9/23/2003	119.51	122.1	51.76	54.8	103.49	104.6	7.7	28.3
8/26/2003	119.42	122.1	51.62	54.8	103.42	104.6	7.68	28.3
7/29/2003	119.16	122.1	51.58	54.8	103.38	104.6	7.39	28.3
6/14/2003	101.34	122.1	50.62	54.8	101.23	104.6	6.22	28.3
5/30/2003	103.62	122.1	49.67	54.8	94.67	104.6	4.62	28.3
4/28/2003	112.74	122.1	50.02	54.8	97.48	104.6	3.41	28.3
3/28/2003	119.62	122.1	51.99	54.8	102.91	104.6	6.21	28.3
2/24/2003	119.82	122.1	52.74	54.8	103.9	104.6	7.62	28.3
12/18/2002	119.34	122.1	51.74	54.8	103.36	104.6	7.77	28.3
9/30/2002	119.28	122.1	51.55	54.8	103.12	104.6	7.22	28.3
7/31/2002	111.72	122.1	50.54	54.8	98.87	104.6	5.46	28.3
6/28/2002	91.22	122.1	48.82	54.8	89.63	104.6	2.62	28.3


Depth to Water in P2
Date
4/28/2007
2/28/2007
12/28/2006
10/28/2006
8/28/2006
6/28/2006
4/28/2006
2/28/2006
12/28/2005
10/28/2005
8/28/2005
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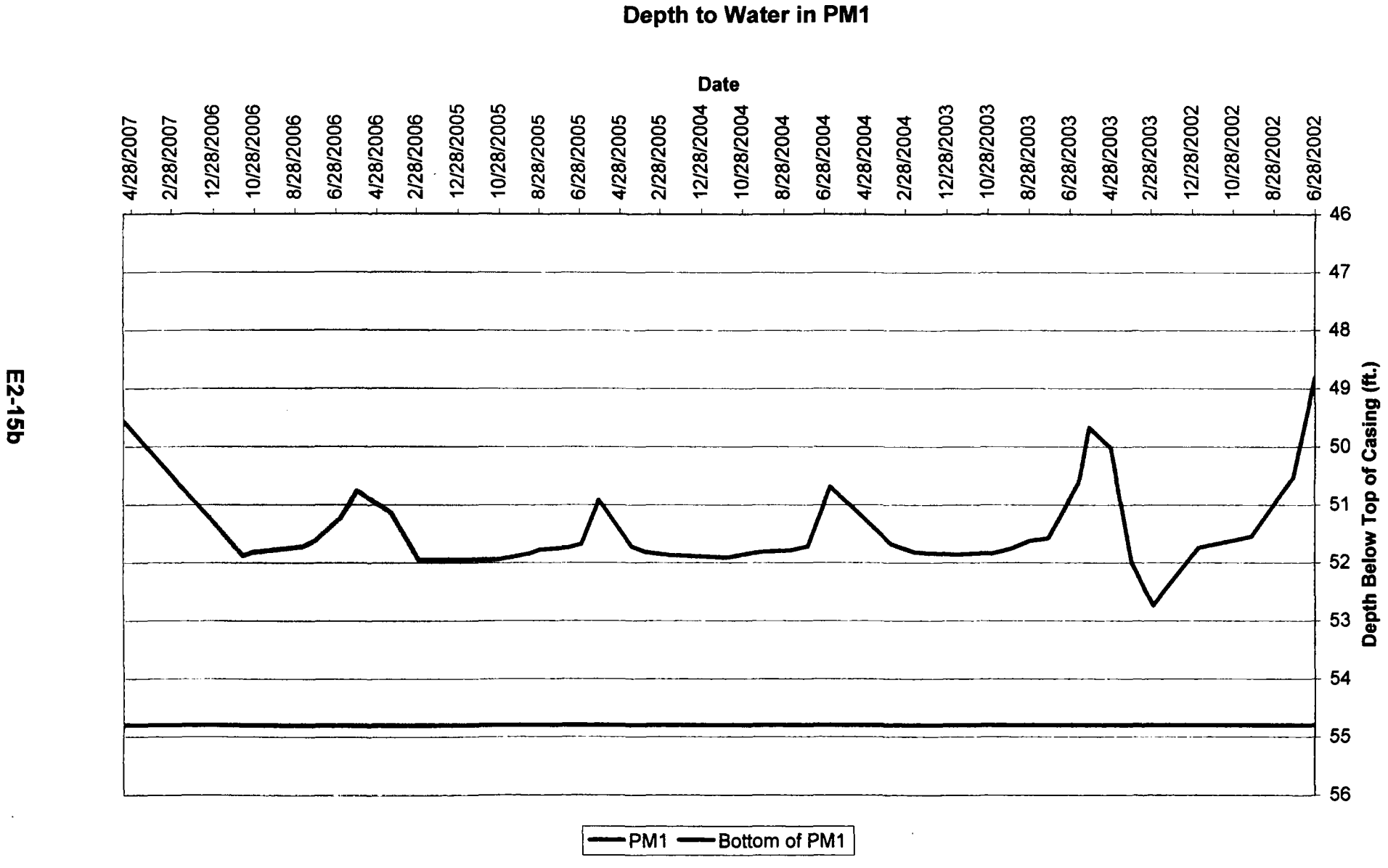
8/28/2003
6/28/2003
4/28/2003
2/28/2003
12/28/2002
10/28/2002
8/28/2002
6/28/2002
80
85
90
95
100
105
110
115
120
125
Depth Below Top of Casing(ft.)
P2
Bottom of Piezometer

E2-15a


Depth to Water in PM1
Date
4/28/2007
2/28/2007
12/28/2006
10/28/2006
8/28/2006
6/28/2006
4/28/2006
2/28/2006
12/28/2005
10/28/2005
8/28/2005
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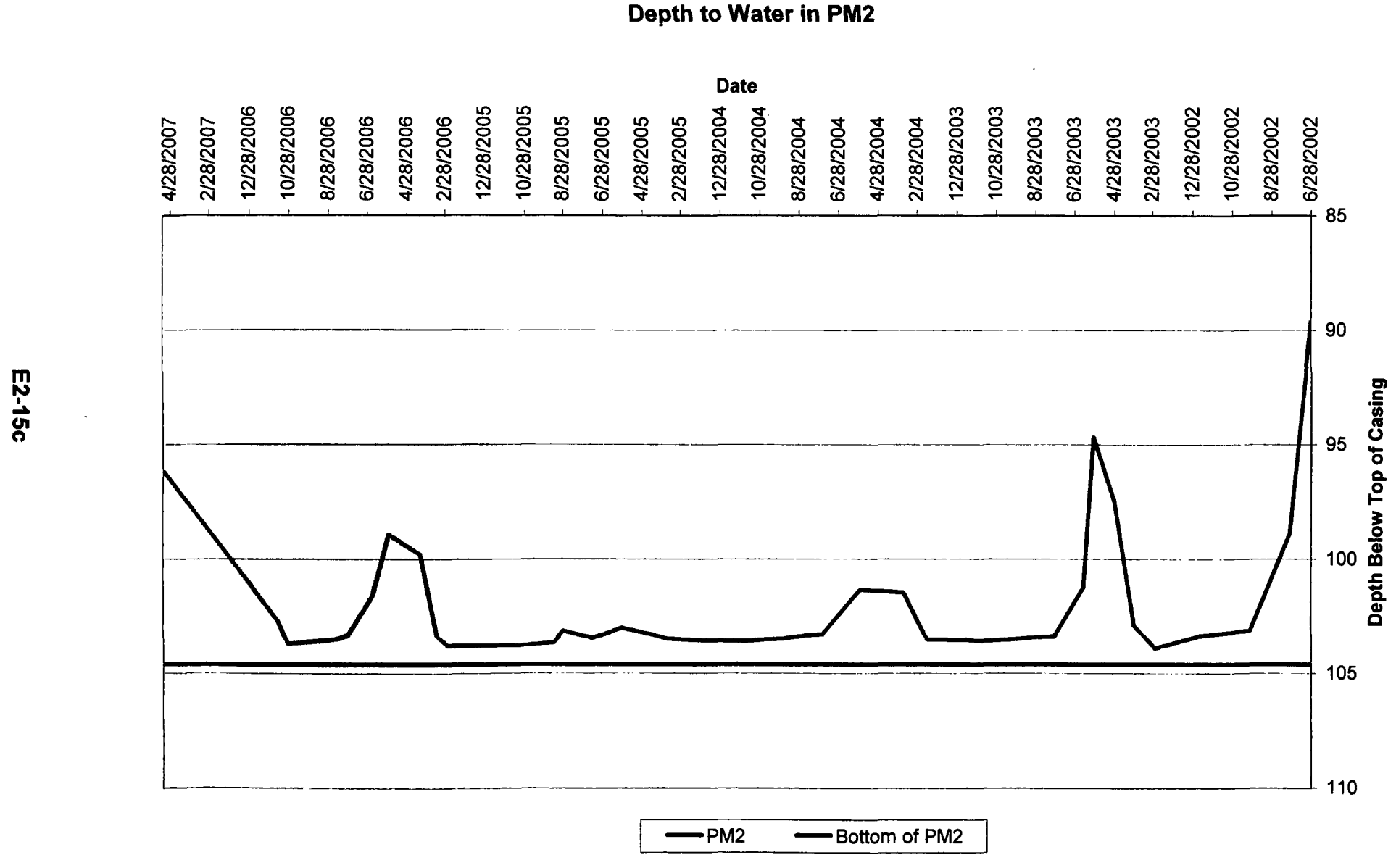
10/28/2003
8/28/2003
6/28/2003
4/28/2003
2/28/2003
12/28/2002
10/28/2002
8/28/2002
6/28/2002
46
47
48
49
50
51
52
53
54
55
56
Depth Below Top of Casing (ft.)
PM1
Bottom of PM1

E2-15b


Depth to Water in PM2
Date
4/28/2007
2/28/2007
12/28/2006
10/28/2006
8/28/2006
6/28/2006
4/28/2006
2/28/2006
12/28/2005
10/28/2005
8/28/2005
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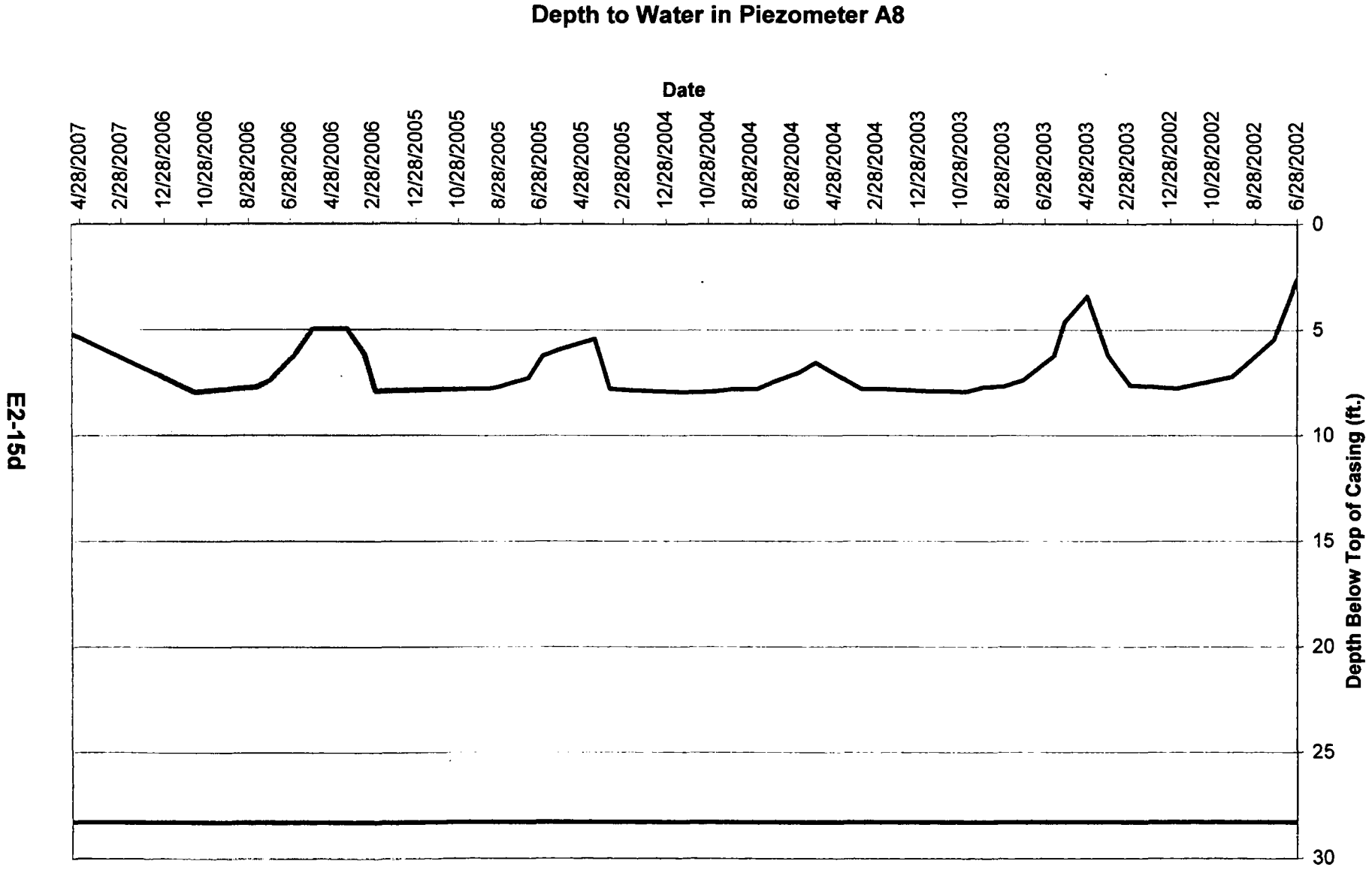
10/28/2003
8/28/2003
6/28/2003
4/28/2003
2/28/2003
12/28/2002
10/28/2002
8/28/2002
6/28/2002
85
90
95
100
105
110
Depth Below Top of Casing
PM2
Bottom of PM2

E2-15c


Depth to Water in Piezometer A8
Date
4/28/2007
2/28/2007
12/28/2006
10/28/2006
8/28/2006
6/28/2006
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2/28/2006
12/28/2005
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4/28/2003
2/28/2003
12/28/2002
10/28/2002
8/28/2002
6/28/2002
0
5
10
15
20
25
30
Depth Below Top of Casing (ft.)
E2-15d

Kootenai Impoundment Dam
Cross Section Plots through Embankment at Piezometers
Billmayer Engineering
Hafferman
30-May-07

Piezometer No.	Distance from Toe of Embankment	Elevation	WS Elevation			
			P2	PM1	PM2	A8
	0	2791	2791	2782.4	2791	2785.8
A8	6	2791	2791	2782.4	2792.2	2785.8
	15	2800	2791	2782.4	2793.5	2787.0
	24.6	2810	2792.4	2782.4	2794.7	2788.2
	48.6	2820	2793.8	2782.4	2795.9	2789.3
PM1	63	2830	2795.2	2782.4	2797.2	2790.5
	72	2830	2796.6	2783.6	2798.4	2791.7
	75	2840	2798	2784.7	2799.7	2792.9
	84.6	2850	2799.4	2785.9	2800.9	2794.1
	93.6	2860	2800.8	2787.1	2802.1	2795.3
	102.6	2870	2802.3	2788.3	2803.4	2796.4
	108.6	2870	2803.7	2789.4	2804.6	2797.6
	114.6	2880	2805.1	2790.6	2805.8	2798.8
	124.8	2890	2806.5	2791.8	2807.1	2800.0
	132	2890	2807.9	2793	2808.3	2801.2
	138	2900	2809.3	2794.1	2809.6	2802.4
PM2	141	2905	2809.7	2794.4	2812	2803.5
	150	2910	2810.7	2795.3	2813.3	2804.7
	162	2920	2812.1	2796.5	2814.5	2805.9
	168.6	2926	2813.5	2797.7	2815.8	2807.1
	180	2926	2814	2798.8	2817	2808.3
P2	199.2	2920	2814.36	2800	2818.2	2809.5
	207.6	2910	2814.5	2801.2	2819.5	2810.6
	234	2905	2814.9	2802.3	2820.7	2811.8
	638	2904	2815	2803.5	2821.9	2813.0
	700	2903.5	2817	2804.7	2823.2	2814.2
	1000	2903	2818	2805.9	2824.4	2815.4

E2-15e

Color Chart(s)

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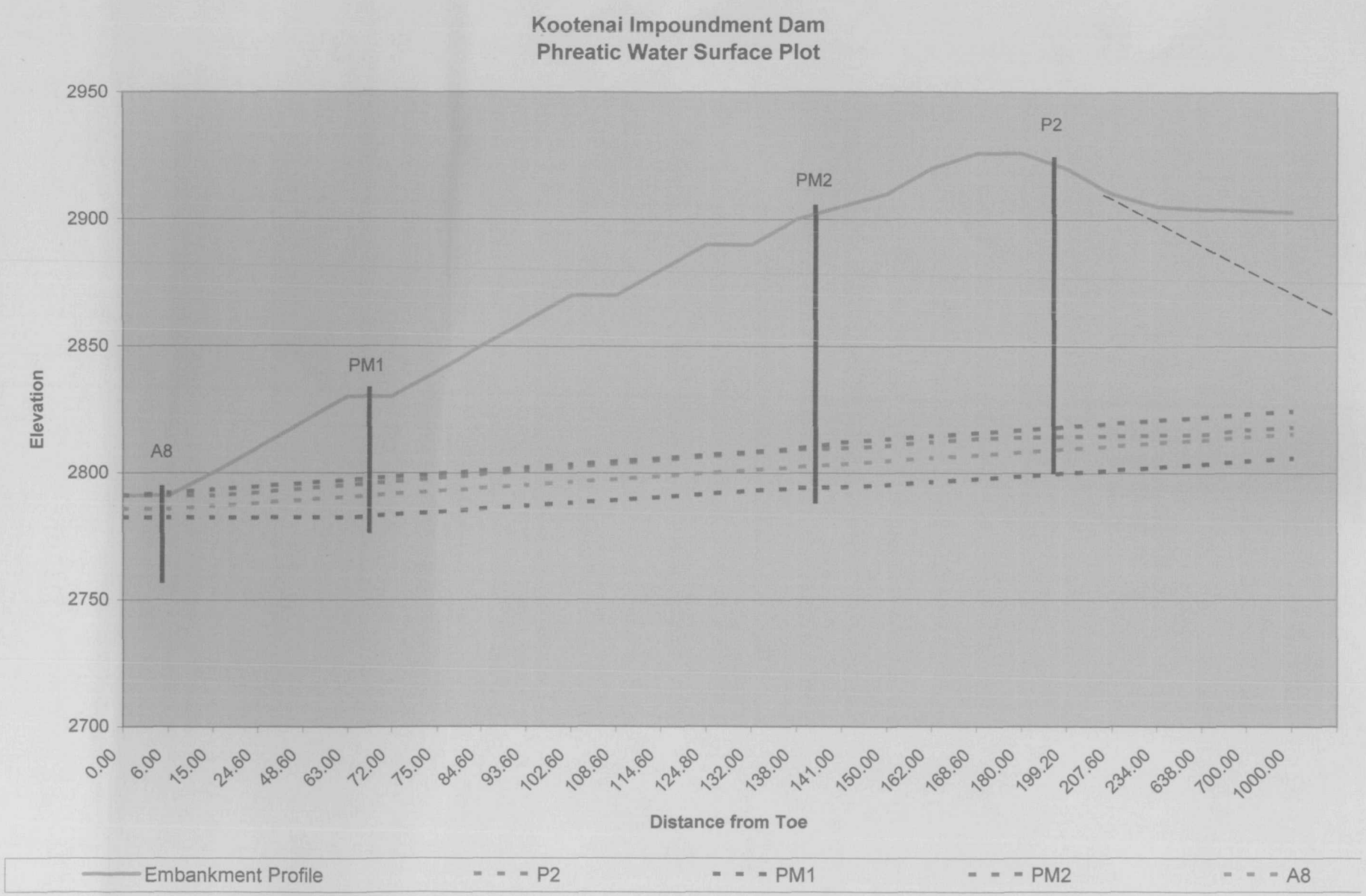

Kootenai Impoundment Dam
Phreatic Water Surface Plot
Elevation
2950
2900
2850
2800
2750
2700
A8
PM1
PM2
P2
0.00
6.00
15.00
24.60
48.60
63.00
72.00
75.00
84.60
93.60
102.60
108.60
114.60
124.80
132.00
138.00
141.00
150.00
162.00
168.60
180.00
199.20
207.60
234.00
638.00
700.00
1000.00
Distance from Toe
Embankment Profile
P2
PM1
PM2
A8

3-13-95

P-0 water at Grnd Level.

P- 104' DRy

P-1 109' DRy needs 4" cap Replaced - may need Saw

P-2 114' wet

P-3 62' DRy

P-4 110' DRy

P-5 105' wet

Pm-1 50' wet

Pm-2 ~~51' DRy~~ 98' DRy needs Pipe sawed off - new 2" cap

Pm-3 ~~40' DRy~~ 51' DRy

Pm-4 40' DRy

Pm-5 49' DRy

Pm-6 66' DRy

A-8 6' wet

Comments - Lower R.S of Face has corrosion that needs Addressed.

4-13-95

P-0	water at Grnd. level -		
P	104'	DRY	- needs sawed + new 2" cap
P-1	109'	DRY	- needs sawed + new 3" "
P-2	105'	wet	- needs 3" cap
P-3	62'	DRY	- ~~needs sawed off 3"~~
P-4	103'	wet	- needs sawed off - 3" cap
P-5	104'	wet	needs 3" cap
P-m6	50'	wet	needs 2" cap
Pm-2	98'	DRY	needs 2" cap
Pm-3	51'	DRY	
Pm-4	40'	DRY	
Pm-5	49'	DRY	need 2" Plug -
Pm-6	66'	DRY	needs 2" cap
A-8	6'	wet	

Note Lower Portion of Erosion on Face needs ~~Address~~

5-15-95

P-O	Water Level Ground Level wet	11 Made Steel Covers	COMENTS
P	104' Dry		shortened pipe 5"IN.
P-1	109' Dry	11	—
P-2	106' WET	11	—
P-3	62' Dry	11	—
P-4	103' wet	11	shortened pipe 11"IN.
P 5	104 WET	11	—
PM 1	50' wet	11	—
PM 2	98' Dry	11	—
PM 3	51' Dry	11	—
PM 4	40' Dry	11	—
PM 5	49' Dry	11	—
PM 6	66 Dry	11	—
A-8	4' wet	11	—

Bob & hrs
Material costs on payne bill plus $5.00

6 - 28 - 95

P0	ground level	wet
P	104	Dry
P-1	109	Dry
P-2	106	wet
P-3	62	Dry
P-4	103	wet
P-5	104	wet
PM1	50'	wet
PM2	98'	Dry
PM3	51'	Dry
PM4	40'	Dry
PM5	49'	Dry
PM6	66	Dry
A 8	4	wet

8-3-95

PO	ground Level	Wet
P	104'	Dry
P-1	109	Dry
P-2	107	wet
P-3	62	Dry
P-4	103	Wet
P-5	104	Wet
PM-1	50'	wet
PM-2	98'	Dry
PM 3	51	Dry
PM4	40'	Dry
PM5	49'	Dry
PM6	66	Dry
A-8	4	Wet

9-12-95

PO	ground Level	wet
P	104	Dry
P-1	109	Dry
P-2	106	wet
P-3	62'	Dry
P-4	103	wet
P-5	104	wet
PM 1	50'	wet
PM2	98'	Dry
PM 3	51	Dry
PM4	40	Dry
PM5	49	Dry
PM6	66	Dry
AB	5	wet

10-26-95

PO	ground Level	wet
P~~-1~~	104	Dry
P-1	109	Dry
P-2	106	wet
P-3	62	Dry
P-4	103	wet
P-5	104	~~Dry~~ wet
PM1	50	wet
PM2	98'	Dry
PM3	51	Dry
PM4	40	Dry
PM5	49	Dry
PM6	66	Dry
AB	5'	wet

12 - 5 - 95

P 0	ground	Level	wet
P	104		Dry
P-1	104		Dry
P-2	107		Wet
P-3	62		Dry
P-4	104		Wet
P-5	103		Wet
PM1	50		wet
PM2	98		Dry
PM3	51		Dry
PM4	40		Dry
PM5	49		Dry
PM6	66		Dry
A 8	5'		wet

1-26-96

P O	Gr Level	Frozen
P	Top Frozen	Down
P-1	109	Dry
P-2	109	Wet
P-3	62	Dry
P-4	106	Wet
P-5	103	Wet
PM 1	50'	Wet
PM 2	Couldn't	Find
PM 3	Top Frozen	Down
PM 4	" "	"
PM 5	Couldn't	Find
PM 6	"	"
A-8	5'	Wet

3-1-96

PO	GRN	Level
P	104	Dry
P-1	109	Dry
P-2	107	Wet
P-3	6-2	Dry
P-4	103	Wet
P-5	103	Wet
PM1	50	Wet
PM2	95	Wet
PM3	51	Dry
PM4	40	Dry
PM5	49	Dry
PM6	66	Dry
A B	41	Wet

4-11-96

PO	ground	Level	Wet
P	104		Dry
P-1	109		Dry
P-2	106		Wet
P-3	62		Dry
P-4	102		Wet
P-5	103		Wet
PM-1	50		Wet
PM2	94		Wet
PM3	54		Dry
PM4	40'		Dry
PM5	49'		Dry BANK WASHED OUT
PM6	66		Dry
A-8	4'		Wet

6-1-96

PO	~~104'~~	~~Dry~~ Wet AT 2" above ground level
P	104'	Dry
P-1	109'	Dry
P-2	107'	Wet
P-3	62'	Dry
P-4	103'	Wet
P-5	102'	Wet
PM-1	50'	Wet
PM-2	97'	Wet
PM-3	51'	Dry
PM-4	40'	Dry
PM-5	49'	Dry
PM-6	66'	Dry
A-8	4'	wet

7-23-96

PO	Ground Level	
P-~~0~~	104	Dry
P-1	109	Dry
P-2	115	Wet
P-3	61	Dry
P-4	109	Dry
P-5	104	wet
PM1	51'	Wet
PM2	~~60~~ 97'	Wet
PM3	51'	Dry
PM4	40'	Dry
PM5	49'	Dry
PM6	~~60~~'	Dry
A-8	6"	Wet

8 - 14 - 96

PO	ground	Level
P	104	Dry
P-1	109'	Dry
P-2	109'	wet
P-3	61'	Dry
P-4	107'	wet
P-5	104'	wet
P-M1	51'	wet
P-M2	98'	Dry
P-M3	51'	Dry
P-M4	40'	Dry
P-M5	49'	Dry
PM6	66'	Dry
A-8	4'	wet

10-3-96

P-0	ground Level	wet
P	104	Dry
P-1	109	Dry
P-2	106	wet
P-3	62	Dry
P-4	108	wet
P-5	104'	wet
PM1	51'	wet
PM2	98'	Dry
PM3	51	Dry
PM4	40	Dry
PM5	49	Dry
PM6	66	Dry
A-8	5	wet

4-21-97

PO	4" ±	above ground
P	104'	Dry
P-1	103'	Wet
P-2	111'	Wet
P-3	61'	Dry
P-4	109'	Dry
P-5	102'	Wet
PM-1	50'	Wet
PM-2	97'	Dry
PM-3	51'	Dry
PM-4	40'	Dry
PM-5	49'	Wet
PM6	66'	Dry
A-8	5'	Wet

6 - 25 - 97

PO	2" above	ground level
P	104'	Dry
P-1	105'	wet
P-2	111'	wet
P-3	61'	Dry
P-4	109'	Dry
P-5	102'	wet
PM1	50'	wet
PM2	97'	Dry
PM3	51'	Dry
PM4	40'	Dry
PM5	49'	Dry
PM6	66'	Dry
A-8	5	wet

7-31-97

PO	Ground Level	
P	104'	Dry
P-1	108'	wet
P-2	113'	wet
P-3	61'	dry
P-4	109'	Dry
P-5	103'	wet
P-M1	50'	wet
PM2	96	dry
PM3	51	Dry
PM4	40	dry
PM5	49	Dry
PM6	66	Dry
A-B	6'	wet

9-19-97

PO	6"	Below ground Level	
P	104'	Dry	
P-1	109'	Dry	
P-2	115'	Wet	
P-3	61'	Dry	
P-4	109'	Dry	
P-5	104'	wet	
PM-1	50'	wet	
PM-2	94'	Dry	3' difference in Depth
PM3	51'	Dry	
PM4	40'	Dry	
PM5	49'	Dry	
PM6	66	Dry	
AB	6'	Wet	

4

3 - 21 - 98

P 0	4"	Below ground Level	wet
P	102'	Dry	
P-1	108'	Dry	
P-2	113'	WeT	
P-3	62	Dry	
P-4	109'	Dry	
P-5	108	WeT	
PM-1	50'	wet	
PM-2	95'	Dry	1' Deeper
PM-3	51'	Dry	
PM-4	40'	Dry	
PM-5	50'	Dry	1' Deeper
PM-6	62	Dry	4' Deeper
A-8	6'	wet	

5-16-98

PO	6"	Below ground level wet
P	102'	Dry
P-1	108'	Dry
P-2	114	Wet
P-3	62'	Dry
P-4	109'	Dry
P-5	109'	Dry
PM1	50'	Wet
PM2	95'	Dry
PM3	51'	Dry
PM4	40'	Dry
PM5	50'	Dry
PM6	62'	Dry
AB	6'	Wet

6-27-00

PO	Ground Level	
P-1	101'	Dry
P-2	104'	Dry
P-3	111'	Wet
P-4	60'	Dry
P-5	106'	Wet
P-6	104	Wet
PM1	99'	Dry
PM2	50'	Wet
PM3	51	Dry
PM4	40'	Dry
PM5	49	Dry
PM6	66'	Dry
R-8	5'	Wet

-0-

8-4-00

P-0	12"	below ground
P-1	101	Dry
P-2	104	Dry
P-3	119	wet
P-4	60	Dry *
P-5	105	Dry
P-6	104	Dry
PM-1	99	Dry — water Top
PM-2	21'	wet
PM-3	50	Dry
PM4	40	Dry
PM5	49	Dry
PM6	65	Dry
AB	7'	wet

9-29-00

P-0 12"+ Below ground
P-1 101 Dry
P-2 104 Dry
P-3 121 Wet
P-4 60 Dry *
P-5 105 Dry
P-6 104 Dry
PM 1 99 Dry
PM 2 51 Wet
PM 3 50 Dry
PM 4 40 Dry
PM 5 49 Dry
PM 6 65 Dry
A-8 7' wet

11-22-00

P0	Below	ground level 12" +
P-1	101	Dry
P-2	104	Dry
P-3	121	wet
P-4	60	Dry *
P-5	105	Dry
P-6	104	Dry
PM1	99	Dry
PM2	52	wet
PM3	50	Dry
PM4	40	Dry
PM5	49	Dry
PM6	65	Dry
A-8	8"	wet

5/31/02

P 104.25 DRY
P-0 water level pond Ground P.Re
P-5 94.77 wet
P-#1 WET 90.28
P-#2 WET 77.61
P-#3 DRY 60.52
P-#4 WET 74.04
~~P-6 DRY .52~~
PM-1 wet 47.26
PM-2 WET 83.71
PM-3 WET 51.44
PM-4 DRY 49.85
PM-5 WET 40.58
PM-6 DRY 65.56
A-8 WET 1.98

6-28-02

Dam inspection and Monitory well Water Levels

PO	.82'
P	102.2' Dry
P1	92.63'
P2	91.22'
P3	60.48' Dry
P4	86.79'
P5	96.34'
PM1	48.82'
PM2	69.63'
PM3	51.62' Dry
PM4	41.02' Dry
PM5	49.83' Dry
PM6	65.52' Dry
A8	2.62'

Channel and Dam is in good condition with no erosion evident

Inlet channel and drain outlets were cleaned of growth and debris was raked

July 31, 2002

Dam Inspection + Water Levels

PO	1.85'	PM2	98.87'
P	102.2' Dry	PM3	51.59' Dry
P1	103.63' Dry	PM4	41.02' Dry
P2	111.72'	PM5	49.84' Dry
P3	60.5' Dry	A8	5.46'
P4	105.83' Dry	PM6	65.52' Dry
P5	104.17' Dry		
PM1	50.54'		

Dam is in good condition.

Aug. 29, 02

Dam Insp. & Water Levels

PO	2.05' Dry	PM1	50.96'
P	102.2' Dry	PM2	99.64'
P1	103.78' Dry	PM3	51.55' Dry
P2	117.82'	PM4	41.02' Dry
P3	60.5' Dry	PM5	49.84' Dry
P4	106.0' Dry	PM6	65.52' Dry
P5	104.19' Dry	A8	6.76'

9-30-02

Dam Inspection and Monitoring Well Water Levels

PO	2.05' Dry	PM1	51.55'
P	102.2' Dry	PM2	103.12'
P1	103.78' Dry	PM3	51.59 Dry
P2	119.25'	PM4	41.02' Dry
P3	60.5' Dry	PM5	49.84' Dry
P4	106.0' Dry	PM6	65.52' Dry
P5	104.17' Dry	A8	7.22'

Channel and Dam are in good condition

Channel Lower Channels and Basin Pipe outlets

Growth.

10-18-02

Dam Inspection:

PO	2.05' Dry	PM1	51.74'
P	102.2' Dry	PM2	103.36'
P1	103.78' Dry	PM3	51.59 Dry
P2	119.34'	PM4	41.02' Dry
P3	60.5' Dry	PM5	49.84' Dry
P4	106.0' Dry	PM6	65.52' Dry
P5	104.17' Dry	A8	7.77'

Dam Inspection

PO	2.05 Dry	PM1	51.92
P	102.2 Dry	PM2	103.74
P1	103.78 Dry	PM3	51.59' Dry
P2	119.68	PM4	41.02 Dry
P3	60.5 Dry	PM5	49.84 Dry
P4	~~004~~ 106.0 Dry	PM6	65.52 Dry
P5	104.17 Dry	A8	7.62

Dam is in good cond.

Dec 5, 2002

Dam Inspect. /Water Levels

PO	2.05' Dry	PM1	52.68'
P	102.2' Dry	PM2	103.88'
P1	103.78' Dry	PM3	51.59' Dry
P2	119.76'	PM4	41.02' Dry
P3	60.5' Dry	PM5	49.84' Dry
P4	106.0' Dry	PM6	65.52' Dry
P5	104.17' Dry	A8	7.68'

January

N/o Levels Taken due to weather

Feb. 24, ~~02~~ 03

PO	2.05' Dry	PM1	52.74'
P	102.2' Dry	PM2	103.90'
P1	103.78' Dry	PM3	51.59' Dry
P2	119.82'	PM4	41.02' Dry
P3	60.5' Dry	PM5	49.84' Dry
P4	106.0' Dry	PM6	65.62' Dry
P5	104.17' Dry	A8	7.62'

Dam is in good condition

3-28-03

Dam inspect

PO	1.42'	PM 1	51.99'
P	102.2' Dry	PM 2	102.71'
P1	103.78' Dry	PM 3	51.59' Dry
P2	119.69'	PM 4	41.02' Dry
P3	60.5' Dry	PM 5	49.84' Dry
P4	106.0' Dry	PM 6	65.52' Dry
P5	104.12' Dry	A 8	6.21'

Dam is in good condition

April 28, 2003

PO	Not Taken due to surface water,		
P	102.2' Dry	PM 2	97.48'
P1	101.62'	PM 3	51.60' Dry
P2	112.74'	PM 4	41.02' Dry
P3	60.5' Dry	PM 5	49.84' Dry
P4	104.08'	PM 6	65.52' Dry
P5	104.17' Dry	A 8	3.41'
PM 1	50.02'		

Dam condition is good

May 30, 2003

Dam inspection and Well Monitoring

PO	Unable to obtain due to surface water		
P ~~P1~~	102.2' Dry	PM 2	94.67'
P1 ~~P2~~	99.42'	PM 3	51.61' Dry
P2 ~~P~~	103.62'	PM 4	40.94' Dry
P3	60.48' Dry	PM 5	49.81' Dry
P4	94.62'	PM 6	65.52' Dry
P5	103.47'	A 6	4.62'
PM 1	49.67'		

Channel and Dam are in good condition

6-14-03

Dam inspection and well monitoring

PO	.98'	PM1	50.62'
P	102.2' Dry	PM2	101.23'
P1	103.78' Dry	PM3	5.160' Dry
P2	101.34'	PM4	41.01' Dry
P3	60.5 Dry	PM5	49.84' Dry
P4	103.23'	PM6	65.52' Dry
P5	103.76'	A8	6.22'

7-29-03

Dam inspection

PO	1.6'	PM1	51.58'
P	102.2' Dry	PM2	103.38'
P1	103.78' Dry	PM3	51.62' Dry
P2	119.16'	PM4	41.0' Dry
P3	60.48' Dry	PM5	49.82' Dry
P4	105.87' Dry	PM6	65.52' Dry
P5	104.17' Dry	A8	7.39'

Channel & Dam are in good condition

Channel loose channel and clean pipes of growth and obstructions

8-26-03

Dam inspection and Well Levels

PO	2.05 Dry	PM1	51.62'
P	102.2' Dry	PM2	103.42'
P1	103.78' Dry	PM3	51.59' Dry
P2	119.42'	PM4	41.02' Dry
P3	60.5' Dry	PM5	49.84' Dry
P4	105.87' Dry	PM6	65.52' Dry
P5	104.17'	A8	7.68'

Sept. 23 2003

Dam inspection

PO	2.05 Dry	PM1	51.76
P	102.2 Dry	PM2	103.49
P1	103.78 Dry	PM3	51.60 Dry
P2	119.51	PM4	41.02 Dry
P3	60.5 Dry	PM5	49.84 Dry
P4	105.87 Dry	PM6	65.52 Dry
P5	104.17	A8	7.70'

Oct. 21, 2003

P-	102.2 Dry	PM 1 -	51.84
PO -	2.05 Dry	2 -	103.54
1 -	103.78 Dry	3 -	51.60 Dry
2 -	119.32	4 -	41.02 Dry
3 -	60.5 Dry	5 -	49.84 Dry
4 -	105.87 Dry	6 -	65.52 Dry
5 -	104.18 Dry	A8 -	7.94

The Dam is in good condition with no visible erosion. Drain channels are clear.

Nov 19, 2003

PO	2.05 Dry	PM 1 -	51.84
P	102.2 Dry	2 -	103.59
P1	103.78 Dry	3 -	51.60 Dry
2	119.32	4 -	41.02 Dry
3	60.5 Dry	5 -	49.84 Dry
4	105.87 Dry	A8 -	7.90
5	104.18 Dry	6 -	65.52 Dry

12-10-04 Dam Inspection

PO- ~~2.05~~ 1.05 Dry — PM-1 — 51.86 Dry
P- ~~102.2~~ 2.05 Dry — 2- 103.54
P1- 103.78 Dry — 3- 51.60 Dry
2- 119.44 — 4- 41.02 Dry
3- 60.5 Dry — 5- 49.84 Dry
4- 105.87 Dry — 6- 65.52 Dry
5- 104.16 Dry — AB- 7.81

Inspection not done in Jan. due to weather.

Feb 12, 2004 Dam Inspection

PO- 2.05' Dry — PM 1- 51.82'
P- 102.2' Dry — 2- 103.52'
P1- 103.78' Dry — 3- 51.60' Dry
2- 119.45' — 4- 41.02' Dry
3- 60.5' Dry — 5- 49.84' Dry
4- 105.87 Dry — 6- 65.52' Dry
5- 104.16 Dry — AB- 7.80'

March 12, 2004 Dam Insp.

PO- 1.72' Surface Wet. — PM 1- 51.68'
P- 102.2' Dry — 2- 101.46'
P1- 103.78' Dry — 3- 51.60' Dry
2- ~~119.74~~ 118.74' — 4- 41.02' Dry
3- 60.5' Dry — 5- 49.84' Dry
4- 105.21' — 6- 15.52' Dry
5- 104.17' Dry — AB- 6.82'

Dam is in good cond. - Some growth starting in drain channels

April 13, 2004

Dam Inspection

P0 -

P -

P1 -

P2 - Note: Unable to do inv

P3 - April due to access problems

P4 -

P5 -

PM-1

PM2

PM3

PM4

PM5

PM6

A8

May 25, 2004

P	101.55	Dry
P-D	Surface Water - Not Measured	
1	103.28	Dry
2	115.14	Water
3	60.51	Dry
4	106.01	Dry
5	104.14	Dry
PM-1	50.95	Water
2	101.34	Water
3	51.59	Dry
4	40.41	Dry
5	49.82	Dry
6	66.62	Dry
A-8	6.55	Water

6-18-04

PO	1.6" Water
P	102.2 Dry
P1	103.78 Dry
P2	116.8
P3	60.5 Dry
P4	106.0 Dry
P5	104.14 Dry
PM1	50.69
PM2	102.14
PM3	51.59 Dry
PM4	40.91 Dry
PM5	49.52 Dry
PM6	46.62 Dry
A8	7.01

Channel is in good condition - Cleared Drain Pipe Outlets and some growth from channel.

Dam is in good condition with no changes in appearance

7-22-14

PO - 2.5 Dry

P - 102.2 Dry

P1 - 103.78 Dry

P2 - 119.21

P3 - 60.5 Dry

P4 - 106.0 Dry

P5 - 104.19 Dry

PM1 - 51.78

PM2 - 103.29

PM3 - 51.59 Dry

PM4 - 40.91 Dry

PM5 - 49.82 Dry

PM6 - 66.62 Dry

DS - 7.42'

Channel is clear and flowing well

Dam is in good condition

Overflow channel shows no changes

8-17-14

PO	2.5' Dry	PM1	51.79'
P	102.2' Dry	PM2	103.34'
P1	103.76' Dry	PM3	51.59' Dry
P2	119.84'	PM4	40.91' Dry
P3	60.5' Dry	PM5	49.82' Dry
P4	106.0' Dry	PM6	66.68' Dry
P5	104.14' Dry	DS	7.79'

Dam & Channel are unchanged

9-21-04

PO	2.5' Dry	PM 1	51.81'
P	102.2' Dry	PM 2	103.49'
P1	103.79' Dry	PM 3	51.58' Dry
P2	119.91'	PM 4	40.91' Dry
P3	60.5' Dry	PM 5	49.83 Dry
P4	106.0' Dry	PM 6	66.62' Dry
P5	104.14' Dry	A 8	7.82

Dam & Channel are in good condition.

10-17-04

PO	2.5' Dry	PM 1	51.81'
P	102.2 Dry	PM 2	103.52'
P1	103.78 Dry	PM 3	51.59 Dry
P2	119.89'	PM 4	40.91 Dry
P3	60.50' Dry	PM 5	49.82 Dry
P4	106.0 Dry	PM 6	66.62 Dry
P5	104.14 Dry	A 8	7.91'

Dam & Channel are in good condition

11-19-04

PO	2.5 Dry	PM 1	51.91
P	102.2 Dry	PM 2	103.59
P1	103.78 Dry	PM 3	51.59 Dry
P2	119.99	PM 4	40.91 Dry
P3	60.5 Dry	PM 5	49.82 Dry
P4	106.0 Dry	PM 6	66.62 Dry
P5	104.14 Dry	A 8	7.96'

Dam & Channel are in good condition.

Unable to access site in December & January
No levels or inspections were performed
during this time

2-13-05

PO	2.5' Dry	PM 1	51.87'
P	102.2' Dry	PM 2	103.54'
P1	103.78' Dry	PM 3	51.59' Dry
P2	119.86'	PM 4	40.91' Dry
P3	60.5' Dry	PM 5	49.82' Dry
P4	106.0' Dry	PM 6	66.62' Dry
P5	104.14' Dry	AP	7.86'

3-19-05

PO	1.92'
P	102.2' Dry
P1	103.78' Dry
P2	119.82'
P3	60.5' Dry
P4	106.0' Dry
P5	104.14' Dry
PM1	51.82'
PM2	103.49'
PM3	51.59' Dry
PM4	40.91' Dry
PM5	49.82' Dry
PM6	66.62' Dry
AP	7.79'

Channel is flowing well
Dam is still somewhat covered in snow and
their is no appearance of erosion

4-10-05

PO	1.68' Surface Moist	PM 1 51.72'
P	102.2' Dry	PM 2 103.32'
P1	103.78' Dry	PM 3 51.59' Dry
P2	119.70'	PM 4 40.91' Dry
P3	60.5' Dry	PM 5 49.82' Dry
P4	102.9' Dry	PM 6 66.62' Dry
P5	104.14' Dry	A 8 5.42'

Dam & Channel are in good condition.

5-29-05

PO	1.42' Surface Water	PM 1 50.92'
P	102.2' Dry	PM 2 103.01'
P1	103.78' Dry	PM 3 51.59' Dry
P2	119.42'	PM 4 40.91' Dry
P3	60.5 Dry	PM 5 49.82' Dry
P4	105.62'	PM 6 66.62' Dry
P5	104.14' Dry	A 8 5.91'

Dam and Channel are in good condition

6-24-05

PO	1.39' Surface Water	PM 1 51.68'
P	102.2 Dry	PM 2 103.29'
P1	103.78 Dry	PM 3 51.59' Dry
P2	112.79'	PM 4 40.91 Dry
P3	60.5' Dry	PM 5 49.82 Dry
P4	102.17'	PM 6 66.62 Dry
P5	101.76'	A 8 6.22'

Cleaned drain pipe outlets and channels of growth

Welded concrete overflow and it is in good condition

Growth on dam is in good condition.

9-14-05

PO	1.22'	PM 1	51.74'
P	102.2' Dry	PM 2	103.46'
P1	103.78' Dry	PM 3	51.59' Dry
P2	119.22'	PM 4	40.91' Dry
P3	60.5' Dry	PM 5	49.82' Dry
P4	106.0' Dry	PM 6	66.62' Dry
P5	104.14' Dry	A 8	7.28'

Dam + Channels are in good condition.

8-27-05

PO	2.5' Dry	PM 1	51.78'
P	102.2' Dry	PM 2	103.64'
P1	103.78' Dry	PM 3	51.59' Dry
P2	119.30'	PM 4	40.91' Dry
P3	60.5 Dry	PM 5	49.82' Dry
P4	106.0 Dry	PM 6	66.62' Dry
P5	104.14' Dry	A 8	7.68'

Dam + Channel are in Good Condition

9-10-05

PO	2.5' Dry	PM1	51.84'
P	102.2' Dry	PM2	103.66'
P1	103.78' Dry	PM3	51.59' Dry
P2	119.32'	PM4	40.91' Dry
P3	60.5' Dry	PM5	49.82' Dry
P4	106.0 Dry	PM6	66.62' Dry
P5	104.14' Dry	A 8	7.76'

Dam + Channel are in Good Condition

10-27-05

P0	2.5 Dry	PM 1	51.96'
P	102.2 Dry	PM 2	103.76'
P1	103.78' Dry	PM 3	51.59 Dry
P2	119.41'	PM 4	40.91 Dry
P3	60.5 Dry	PM 5	49.82 Dry
P4	106.0 Dry	PM 6	65.62' Dry
P5	104.14' Dry	A 8	7.91'

No inspection was performed for Nov., Dec., or Jan. due to access restrictions from winter conditions.

Feb. 24, 2006

P0 - 2.5' Dry
P - 102.1' Dry
P1 - 103.78' Dry
P2 - 119.44'
P3 - 60.5' Dry
P4 - 106.0' Dry
P5 - 104.14' Dry
PM1 - 51.95'
PM2 - 103.79'
PM3 - 51.59' Dry
PM4 - 40.91' Dry
PM5 - 49.82' Dry
PM6 - 65.62' Dry
A8 - 7.92'

Channels are in good condition and flowing well.

Dam is in good, surface soils are soft from spring thaw

3-12-06

P0	1.46' Surface Water	PM-1	51.62'
P	102.2' Dry	PM-2	103.39'
P1	103.78' Dry	PM-3	51.59' Dry
P2	119.52'	PM-4	40.91' Dry
P3	60.5' Dry	PM-5	49.82' Dry
P4	106.0' Dry	PM-6	65.62' Dry
P5	104.14' Dry	A-8	6.18'

Dam & Channel are in good condition

4-07-06

P0	Not taken due to surface water	PM1	51.14'
P	102.2' Dry	PM2	99.79'
P1	102.64'	PM3	51.59' Dry
P2	114.34'	PM4	40.91' Dry
P3	20.5' Dry	PM5	49.82' Dry
P4	103.42'	PM6	65.62' Dry
P5	104.14' Dry	A8	4.96'

Dam and Channel are in good Condition

May 27, 2006

P0	Not taken due to surface water	PM1	50.76'
P	102.2' Dry	PM2	98.92'
P1	101.02'	PM3	51.55' Dry
P2	109.78'	PM4	40.91' Dry
P3	60.5' Dry	PM5	49.82' Dry
P4	108.23'	PM6	65.62' Dry
P5	104.14' Dry	A8	4.98'

Dam and Channel are in good condition

6-21-06

P0- 1.12' PM1 - 51.23'
P - 102.2' Dry PM2 - 101.62'
P1 - 103.78' Dry PM3 - 51.59' Dry
P2 - 110.89' PM4 - 40.91' Dry
P3 - 60.5' Dry PM5 - 49.82' Dry
P4 - 105.23' PM6 - 65.62' Dry
P5 - 101.14' A8 - 6.18'
Dam and Channels are in good condition.
Cleaned drain pipe outlets and channels of growth.

7-26-06

P0 - 1.51' PM1 - 51.61'
P - 102.2 Dry PM2 - 103.32'
P1 - 103.78 Dry PM3 - 51.59 Dry
P2 - 110.14' PM4 - 40.91 Dry
P3 - 60.5 Dry PM5 - 49.82 Dry
P4 - ~~100.0 Dry~~ 104.14' Dry PM6 - 65.62' Dry
P5 - ~~60.50 Dry~~ A8 - 7.42'
Dam Channel are in good condition.

8-16-06

P0 - 2.5' Dry PM-1 - 51.72'
P - 102.2' Dry PM-2 - 103.51'
P1 - 103.78' Dry PM-3 - 51.59' Dry
P2 - 110.39' PM-4 - 40.91' Dry
P3 - 60.5' Dry PM-5 - 49.82' Dry
P4 - 105.5' Dry PM-6 - 65.62' Dry
P5 - 104.14' Dry A-8 - 7.72'
Dam and channel are in good condition

Inspection was not performed in Sept. due to extensive travel out of town on other projects. Conf C.

10-30-06

PO -	2.5' Dry	PM1 - 51.82'
P -	102.2' Dry	PM2 - 103.69'
P1 -	103.78' Dry	PM3 - 51.59' Dry
P2 -	119.18' water	PM4 - 40.91' Dry
P3 -	60.5' Dry	PM5 - 49.82' Dry
P4 -	106.0' Dry	PM6 - 65.52' Dry
P5 -	104.14' Dry	A8 - 7.92'

Dam & channel are in good condition.

11-14-06

PO -	2.5' Dry	PM1 - 51.88'
P -	102.2' Dry	PM2 - 103.72'
P1 -	103.78' Dry	PM3 - 51.59' Dry
P2 -	119.11'	PM4 - 40.91' Dry
P3 -	60.5' Dry	PM5 - 49.82' Dry
P4 -	106.0' Dry	PM6 - 65.52' Dry
P5 -	104.14' Dry	A8 - 7.96'

Dam and Channel are in good condition.

No inspections were performed for Dec., Jan., & Feb. due to road being closed by winter conditions.

March 2, 2007 Randy G

EXHIBIT 3

MAY 8TH SITE PHOTOGRAPHS E3-1 TO E3-40

Color Photo(s)

The following pages contain color that does not appear in the scanned images.

To view the actual images, contact the Region VIII Records Center at (303) 312-6473.

KOOTENAI IMPOUNDMENT DAM EMBANKMENT, DOWNSTREAM FACE

JAY BILLMAYER AT PIEZOMETER P-O

JEFF ROBERTSON AT PIEZOMETER P1

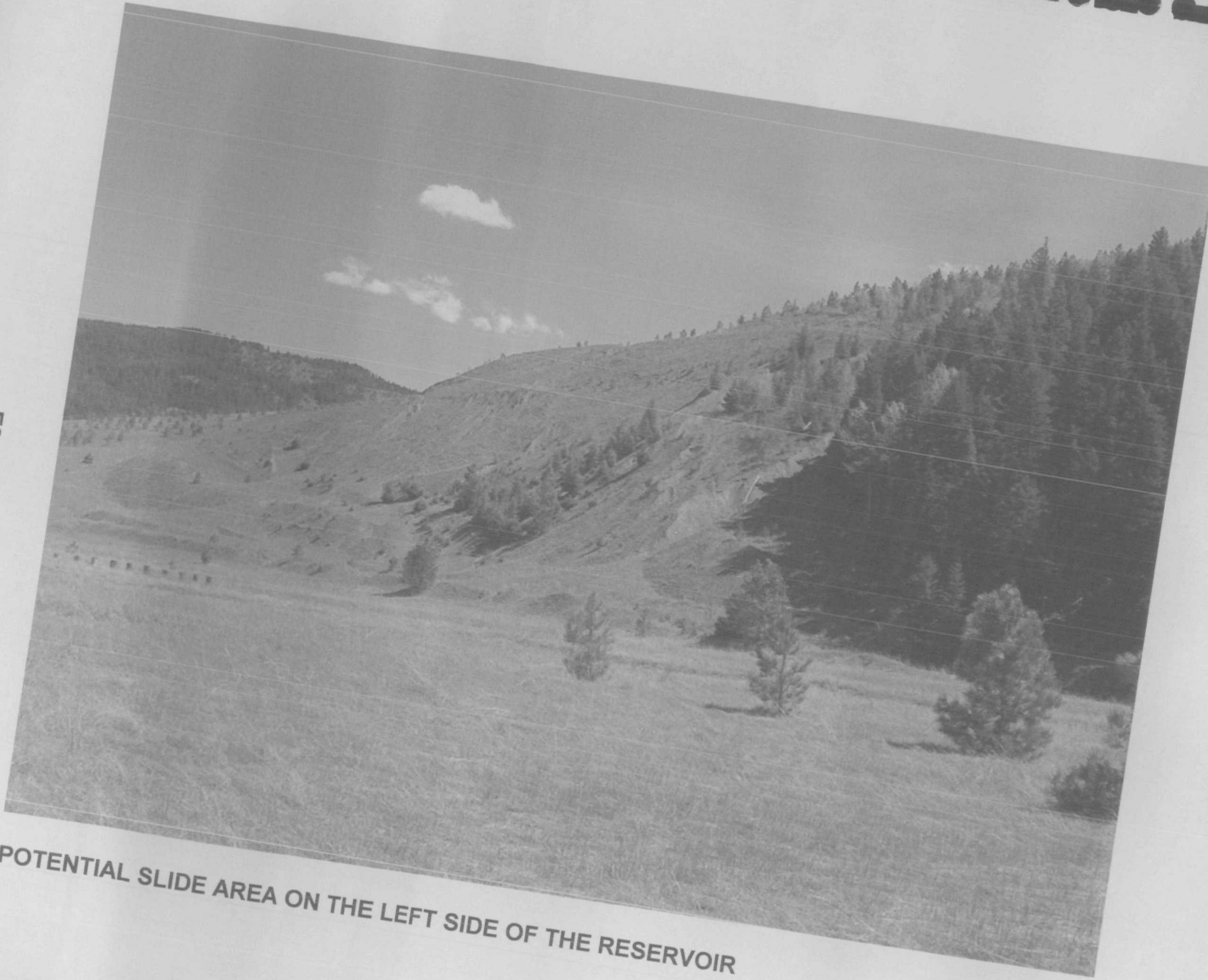
KOOTENAI IMPOUNDMENT DAM RESERVOIR LOOKING NORTHEAST

UPSTREAM FACE OF EMBANKMENT AND EDGE OF CREST

CREST OF EMBANKMENT LOOKING NORTHWEST

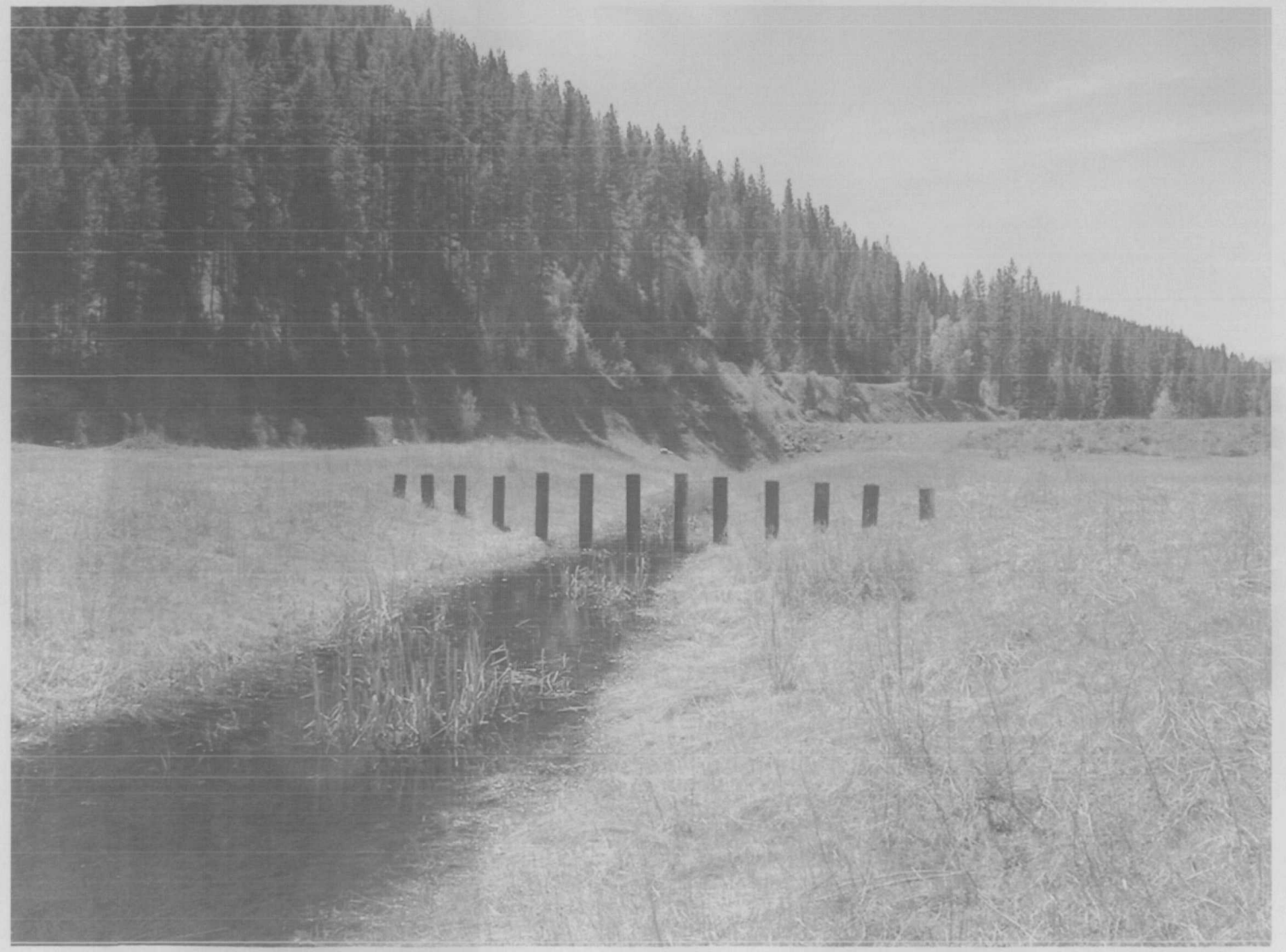
PIEZOMETER P3

JAY BILLMAYER AND JEFF ROBERTSON AT PIEZOMETER P4



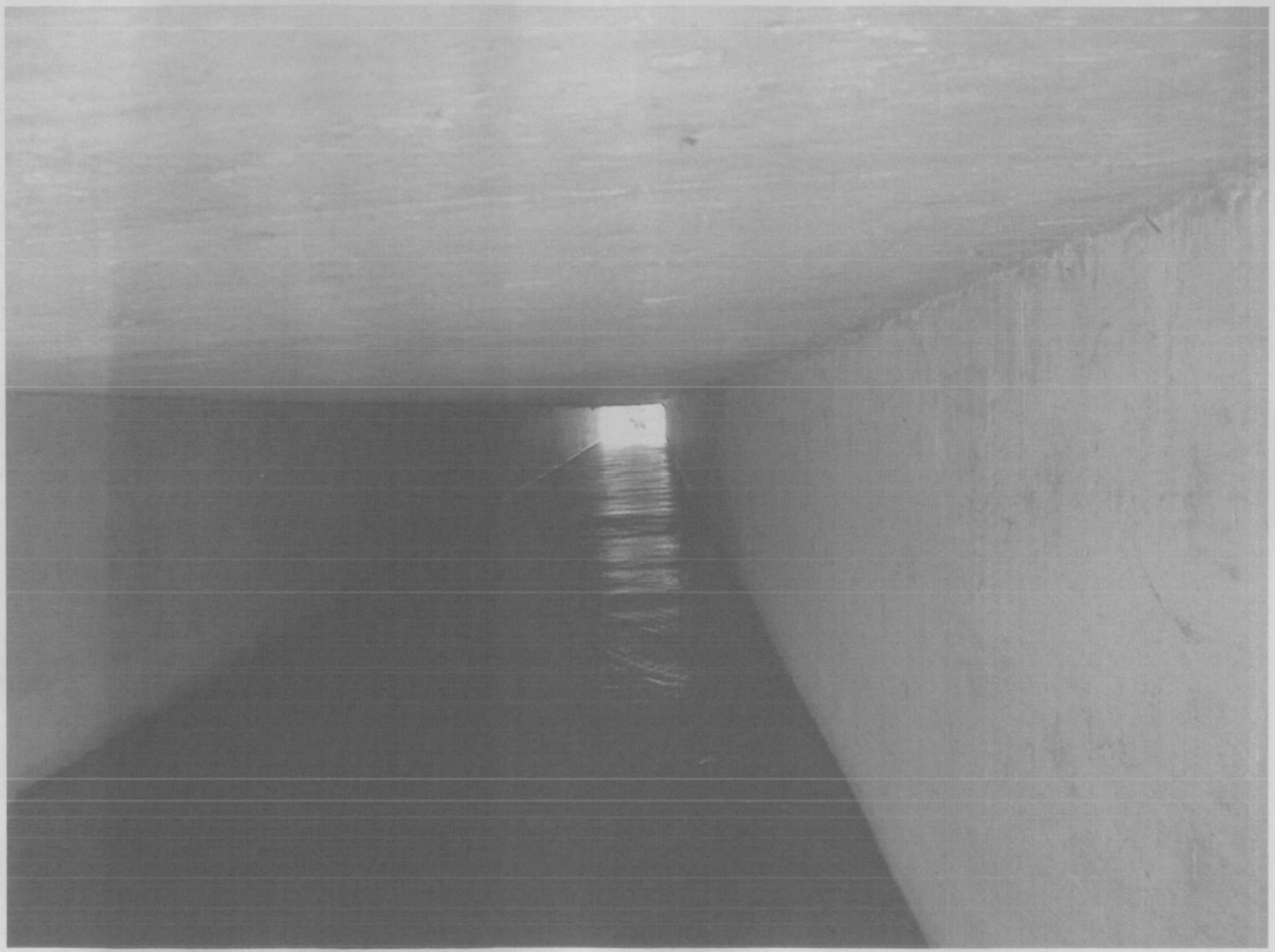
POTENTIAL SLIDE AREA ON THE LEFT SIDE OF THE RESERVOIR

CREST OF THE EMBANKMENT LOOKING SOUTHWEST



ENTRTANCE CHANNEL TO CONCRETE SPILLWAY AND STEEL I-BEAM TRASH RACK

ENTRANCE TO CONCRETE BOX CULVERT

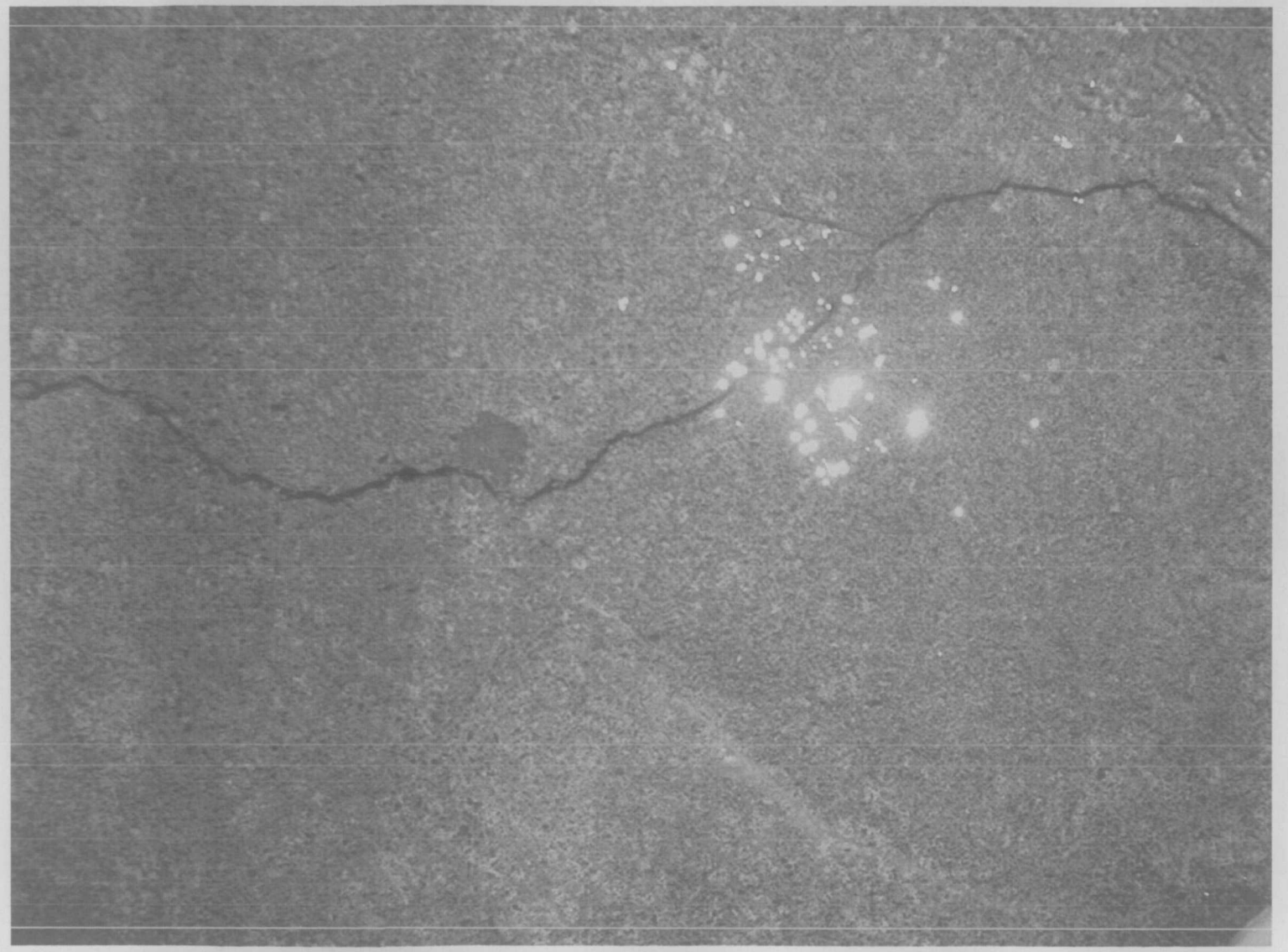


INSIDE BOX CULVERT AT ENTRANCE

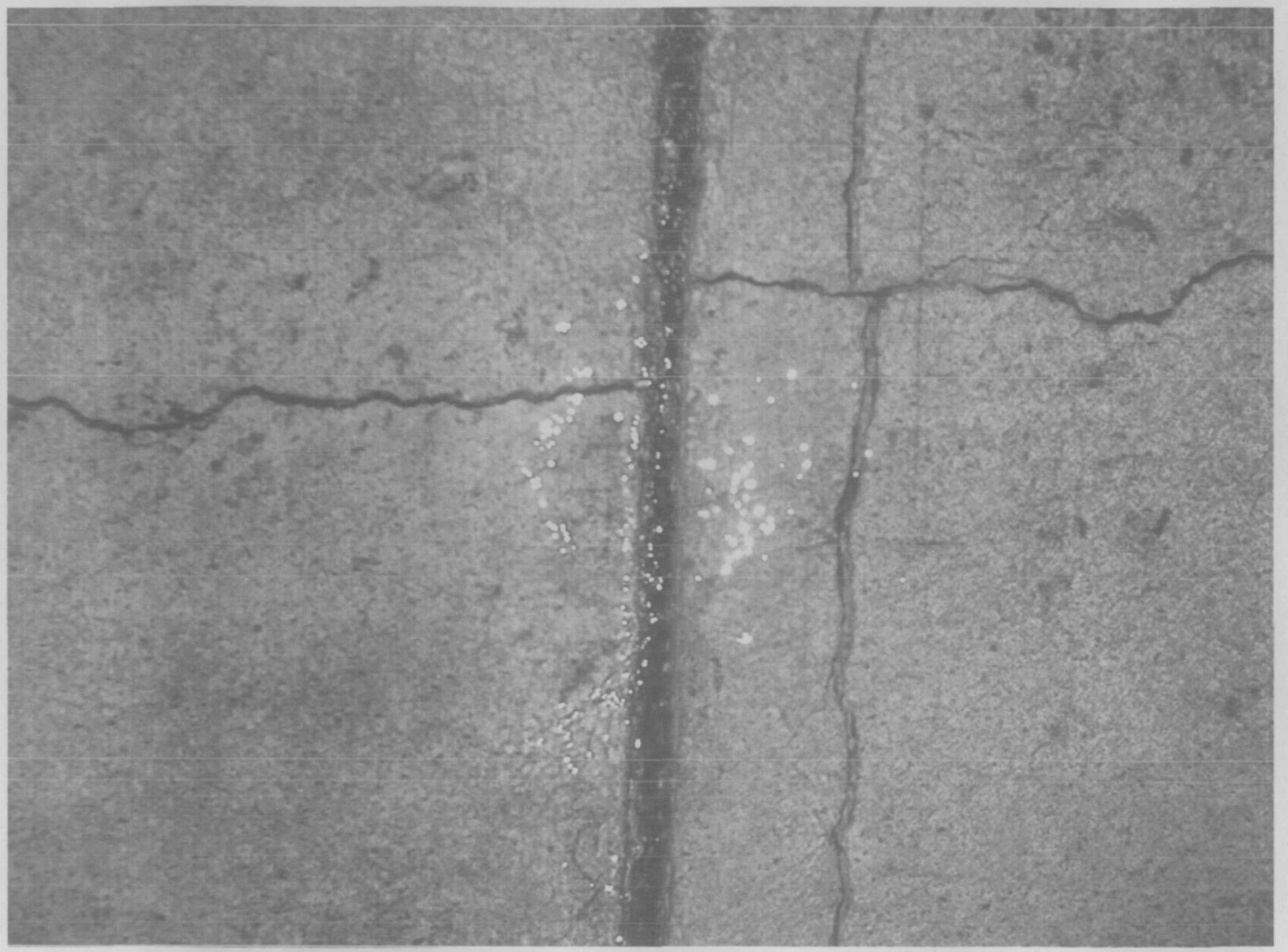
BROKEN CONCRETE AT ENTRANCE TO BOX CULVERT

ROCKS ON THE LEFT SIDE OF THE ENTRANCE TO THE BOX CULVERT

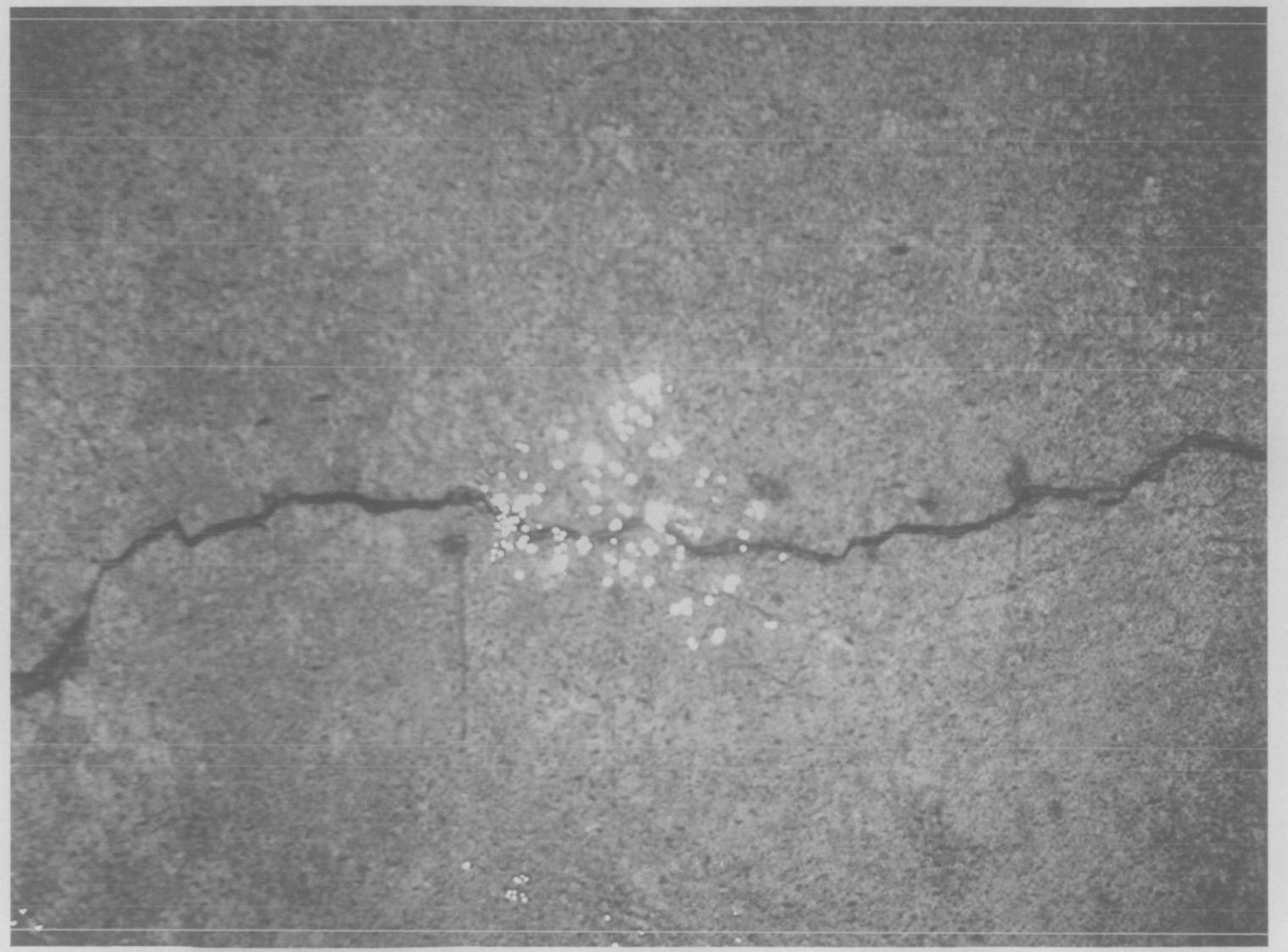
CENTERLINE CRACK AT ENTRANCE TO BOX CULVERT



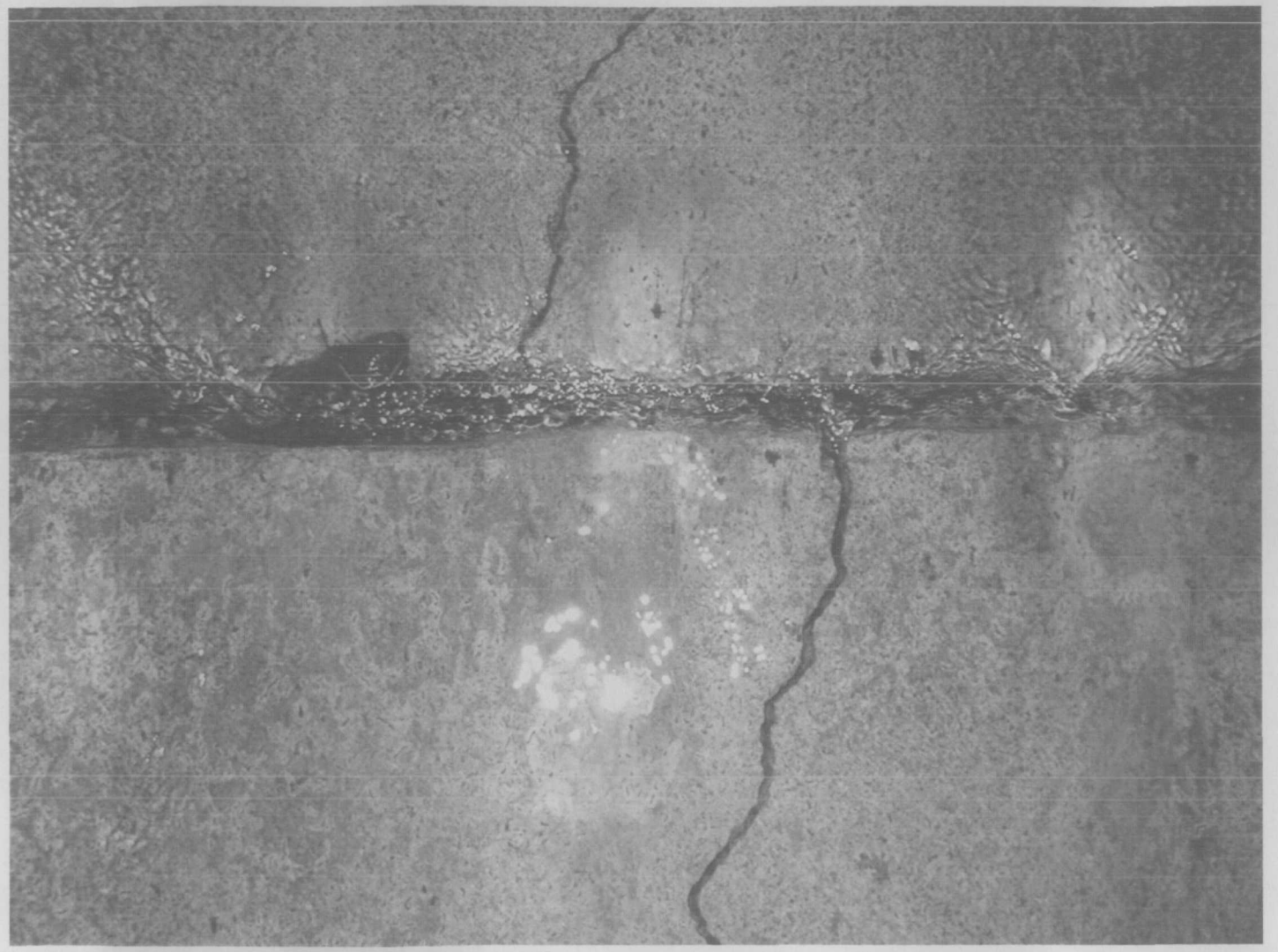
CENTERLINE CRACK ABOVE TRANSVERSE JOINT #1



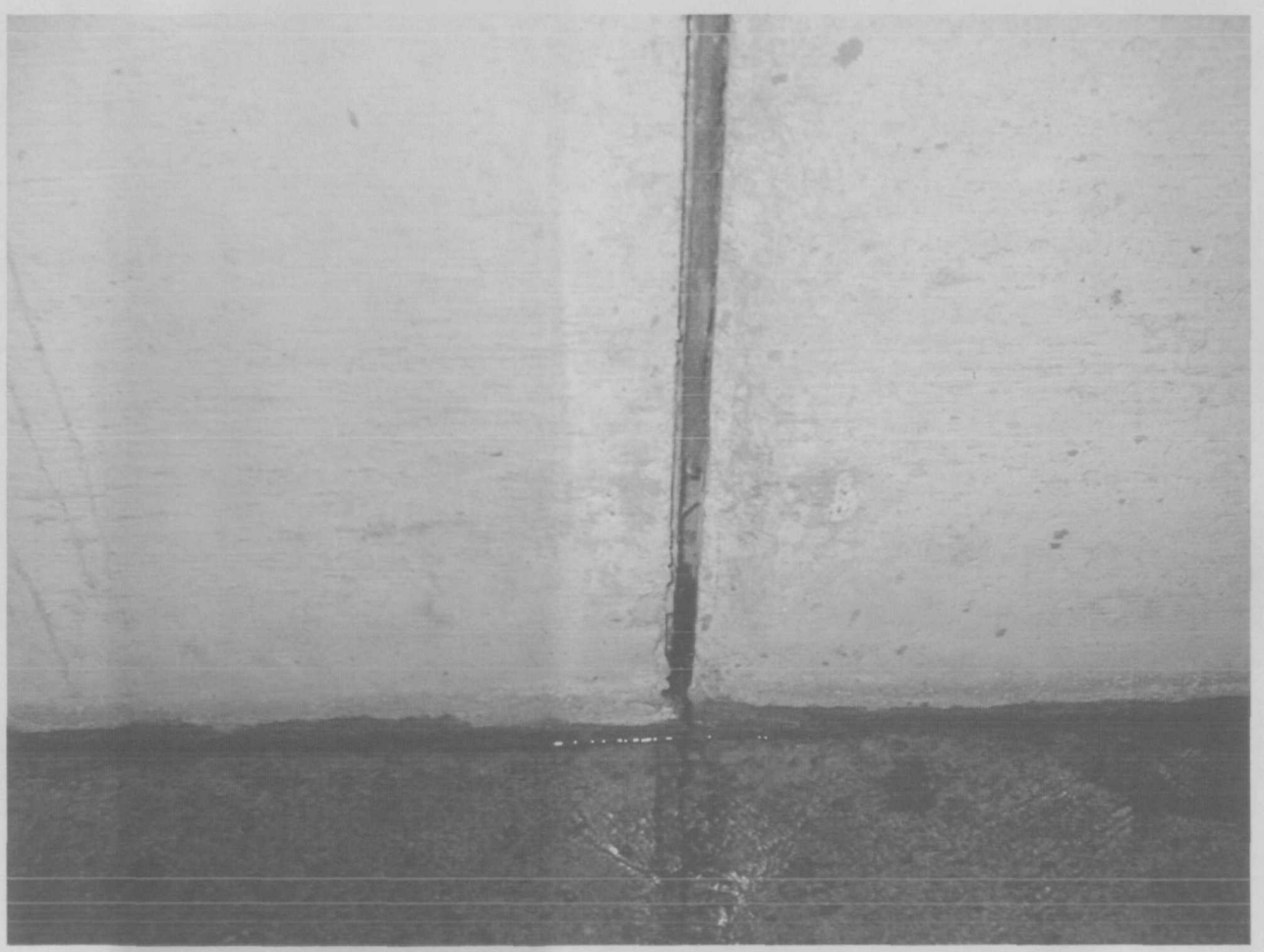
TRANSVERSE JOINT #1 AND TRANSVERSE CRACK



CRACK BELOW TRANSVERSE JOINT #1

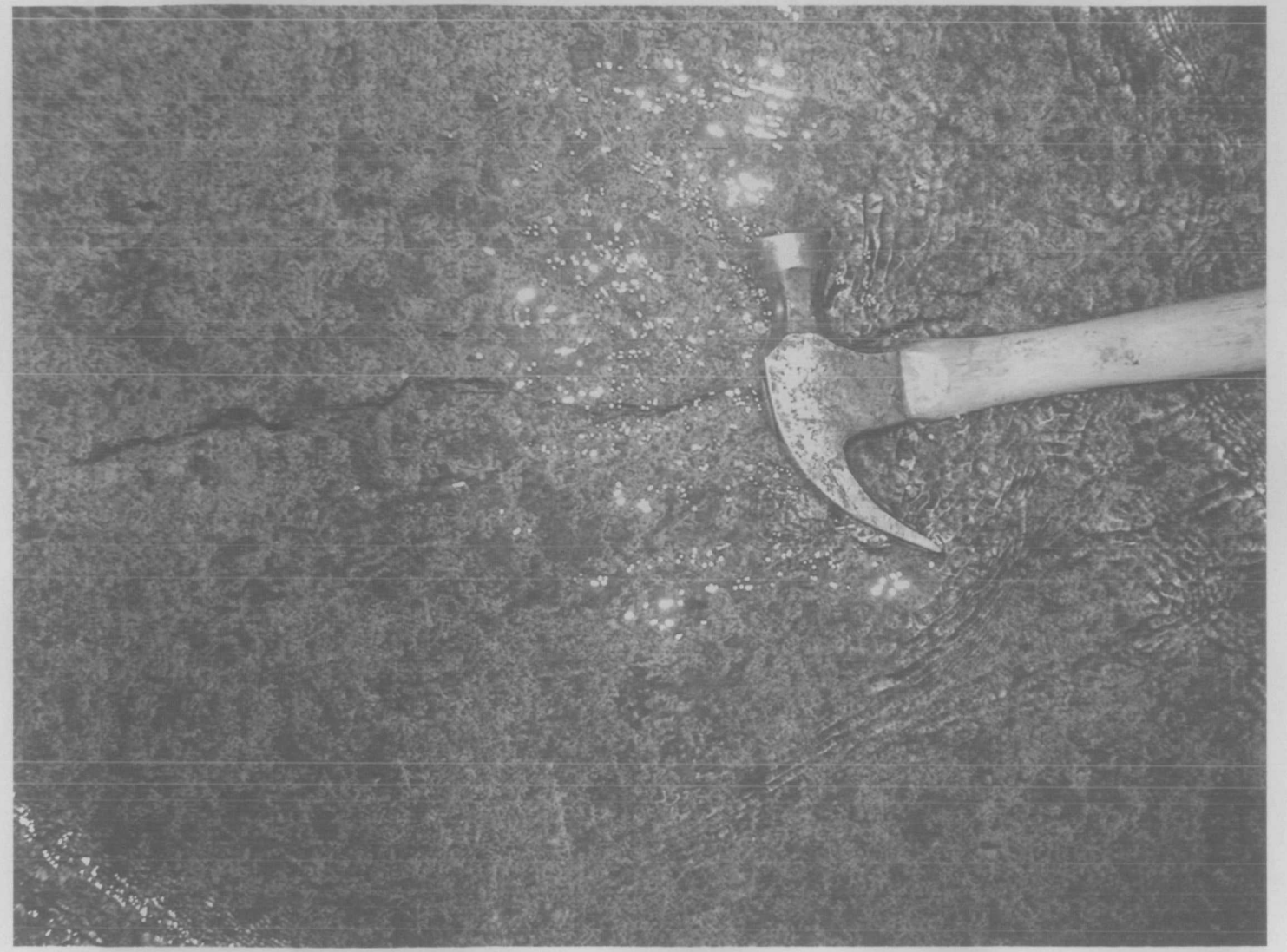


TRANSVERSE JOINT #2, NOTE DISPLACEMENT OF CENTERLINE CRACK



JOINT MATERIAL MISSING FROM TRANSVERSE JOINT #2

CLOSE UP OF MISSING
JOINT MATERIAL

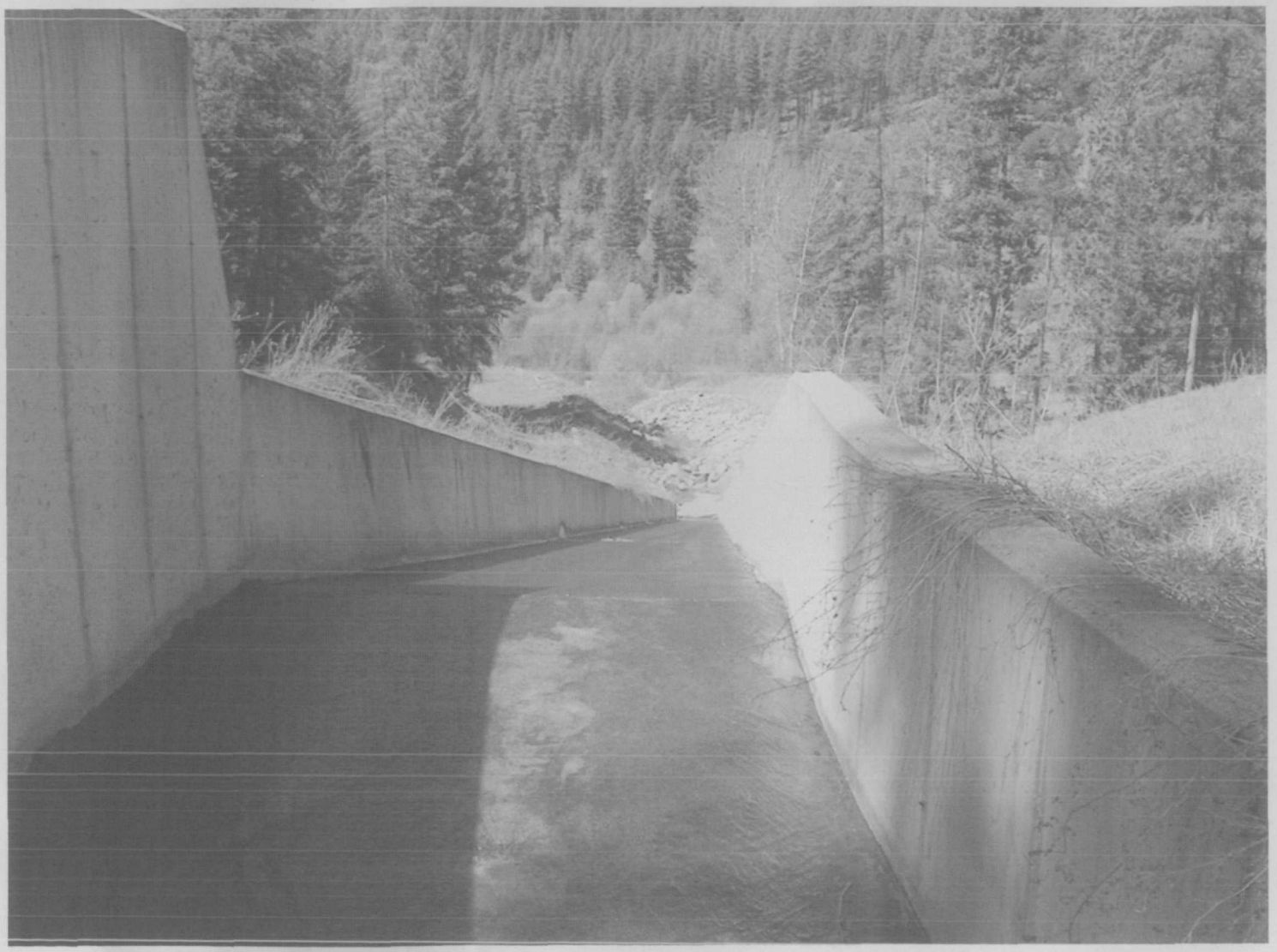


CENTERLINE CRACK BELOW TRANSVERE JOINT #2, HAMMER SHOWN FOR SCALE

CONCRETE CHUTE SPILLWAY AT EXIT FROM BOX CULVERT

TYPICAL
CRACK ON
THE LEFT
SIDE OF THE
OPEN CHUTE

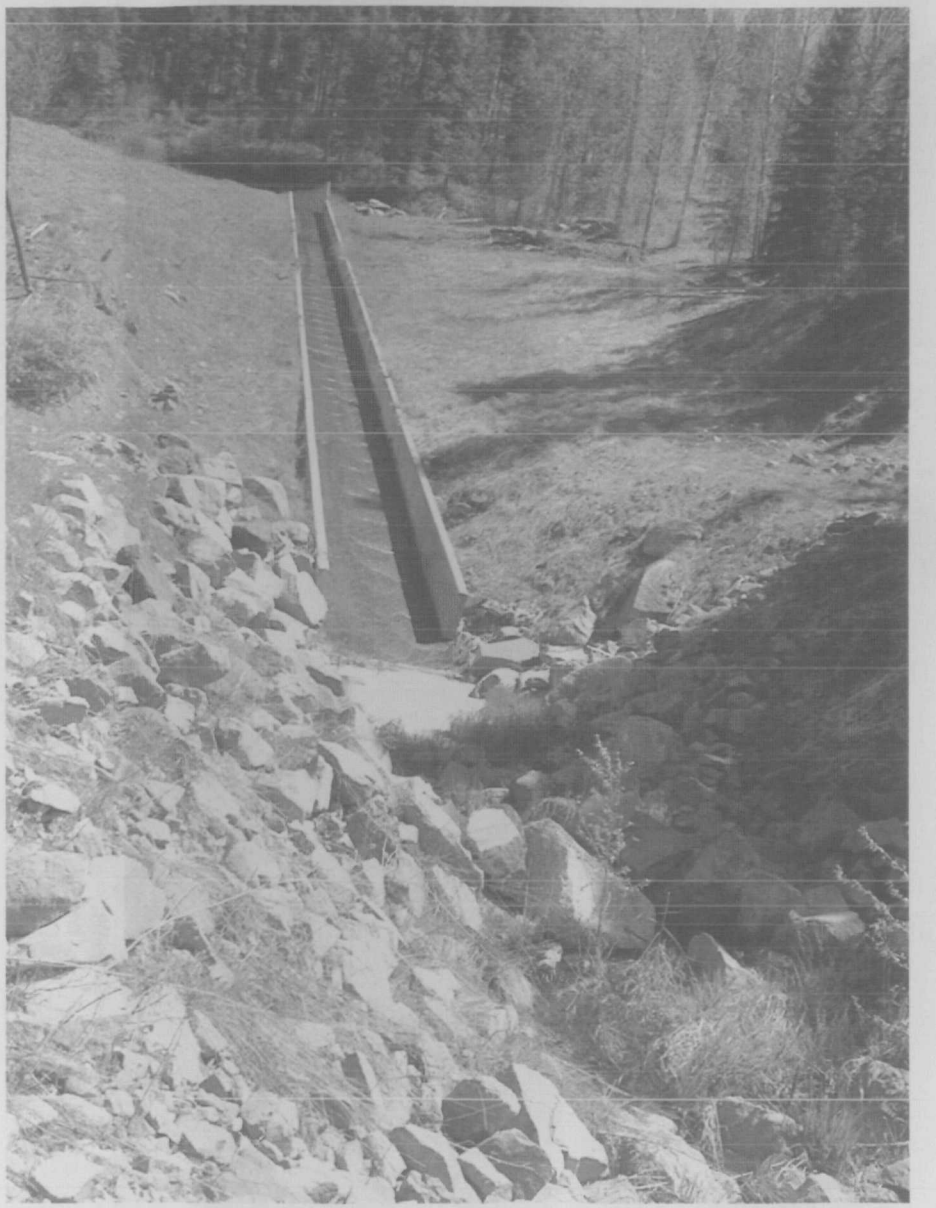
SPALLED CONCRETE ON RIGHT SIDE WALL



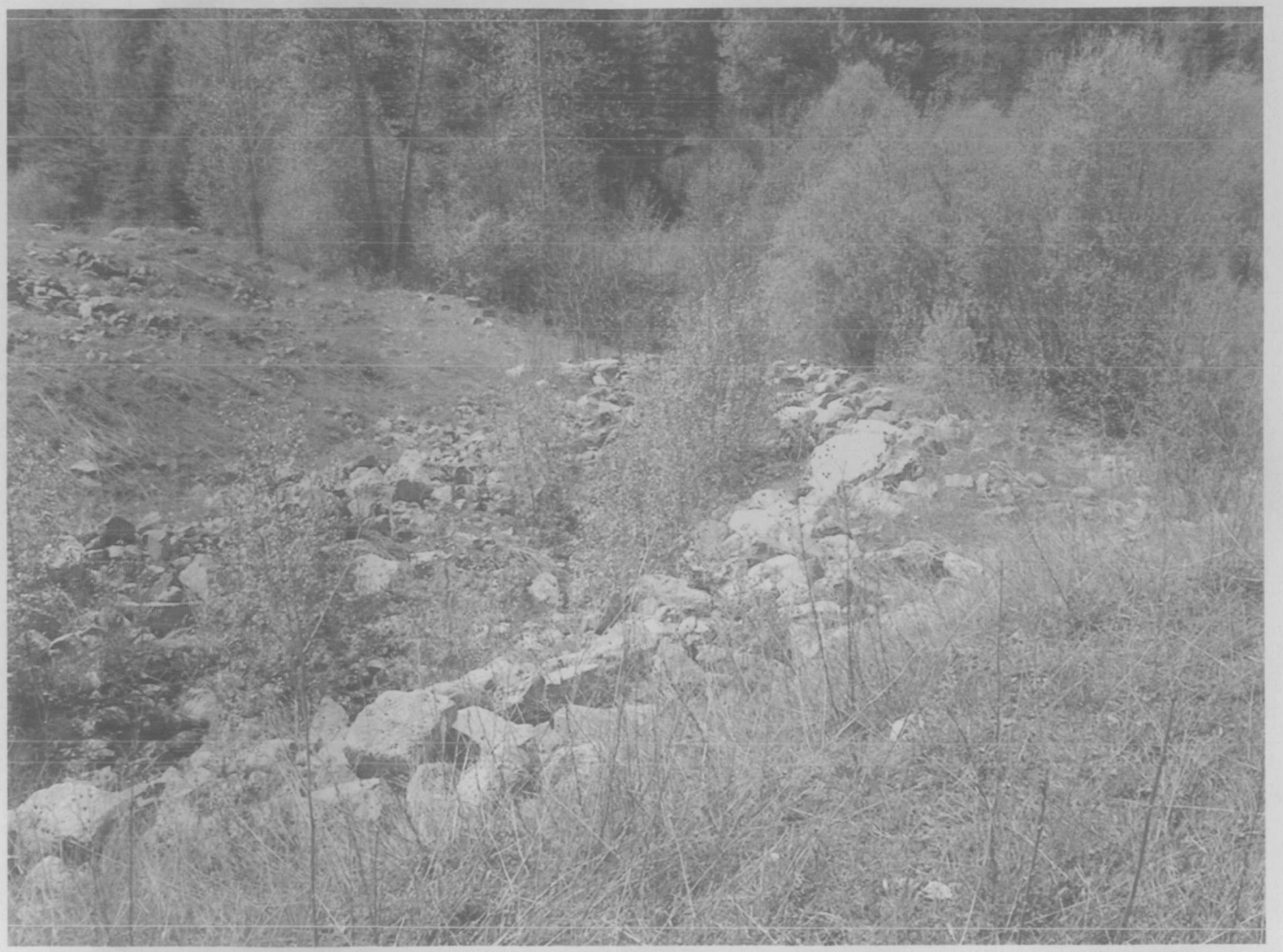
ENTRANCE TO STEEP SECTION OF OPEN CHUTE SPILLWAY

LEFT SIDE OF STEEP SECTION OF OPEN CHUTE SPILLWAY, NOTE CONSTRUCTION WOBBLES AT WALL TO FLOOR JOINT

CONCRETE CHUTE SPILLWAY LOOKING BACK AT EXIT TO BOX CULVERT



TOE OF STEEP
SECTION OF
CONCRETE CHUTE
SPILLWAY



RIPRAP CHANNEL BELOW STEEP CONCRETE CHUTE SPILLWAY

OPEN DRAIN NEAR THE LEFT GROIN ON TOP OF LIFT #1

TOP OF LIFT#1 LOOKING NORTHWEST, NOTE SMALL COTTONWOODS

POSSIBLE EROSION CUT NEAR LEFT SIDE DRAIN, ON TOP OF LIFT #1

FLOW FROM 12-INCH CMP DRAINS AT THE TOE OF THE LEFT GROIN, LOOKING UPSTREAM

FLOW FROM THE 8-INCH CONCRETE PIPE DRAIN NEAR LEFT GROIN

FLOW FROM THE 12-INCH CMP DRAIN NEAR LEFT CENTER

FLOW FROM THE 12-INCH STEEL PIPE DRAIN NEAR CENTER OF THE EMBANKMENT TOE

12-INCH STEEL PIPE,
GROUTED SHUT, NEAR
CENTER OF TOE,
MIDWAY UP LIFT #1

8-INCH CONCRETE PIPE DRAIN NEAR RIGHT GROIN

CULVERTS AT CONFLUENCE OF EARTHEN EMERGENCY SPILLWAY CHANNEL OUTLET AND DRAIN OUTLET CHANNEL

EXHIBIT 4

DISCHARGE CALCULATIONS FROM 12-INCH STEEL PIPE E4-1
RATING TABLE FOR 12-INCH STEEL PIPE E4-2
OPEN CHANNEL FLOW CALCULATION E4-3
OPEN CHANNEL FLOWMASTER RATING TABLE E4-4 to E4-6

kOOTENAI IMPOUNDMENT 12-INCH STEEL PIPE
Worksheet for Circular Channel

Project Description	
Project File	\\b3\admin\document\job files\jobs\r\r_56_01\documents\annual inspection\12 steel.fm2
Worksheet	12 Steel Drain Outlet
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Mannings Coefficient	0.012	
Channel Slope	0.040000	ft/ft
Depth	0.21	ft
Diameter	12.00	in

Results		
Discharge	0.75	cfs
Flow Area	0.12	ft²
Wetted Perimeter	0.95	ft
Top Width	0.81	ft
Critical Depth	0.36	ft
Percent Full	21.00	
Critical Slope	0.004829	ft/ft
Velocity	6.22	ft/s
Velocity Head	0.60	ft
Specific Energy	0.81	ft
Froude Number	2.86	
Maximum Discharge	8.30	cfs
Full Flow Capacity	7.72	cfs
Full Flow Slope	0.000374	ft/ft
Flow is supercritical.		

Table
Rating Table for Circular Channel

Project Description	
Project File	\\b3\admin\document\job files\jobs\r\r_56_01\documents\annual inspection\12 steel.fm2
Worksheet	12 Steel Drain Outlet
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Discharge

Constant Data		
Mannings Coefficient	0.012	
Channel Slope	0.040000	ft/ft
Diameter	12.00	in

Input Data			
	Minimum	Maximum	Increment
Depth	0.00	0.99	0.05 ft

Rating Table

Depth (ft)	Discharge (cfs)	Velocity (ft/s)
0.00	0.00	0.00
0.05	0.04	2.52
0.10	0.16	3.94
0.15	0.38	5.08
0.20	0.68	6.04
0.25	1.06	6.89
0.30	1.51	7.63
0.35	2.03	8.28
0.40	2.60	8.87
0.45	3.22	9.38
0.50	3.86	9.83
0.55	4.52	10.21
0.60	5.19	10.54
0.65	5.84	10.80
0.70	6.46	11.01
0.75	7.04	11.14
0.80	7.55	11.20
0.85	7.95	11.18
0.90	8.23	11.05
0.95	8.29	10.76
1.00	7.72	9.83

Billmayer Engineering
Kootenai Impoundment Dam Annual Inspection
7-May-07

Flow Measurement Outlet Drain Channel

Distance from Initial Point		Depth	Width	Velocity	Area	Discharge
0.5		0	0.25	0	0	0
1		0.3	0.5	1	0.15	0.15
1.5		0.6	0.5	1.36	0.3	0.408
2		0.7	0.5	2.78	0.35	0.973
2.5		0.8	0.5	1.7	0.4	0.68
3		0.7	0.5	1.26	0.35	0.441
3.5		0.7	0.5	1.17	0.35	0.4095
4		0.5	0.75	1.13	0.375	0.42375
5		0	0.5	0	0	0
4.5	SECTION WIDTH		4.5	**TOTAL FLOW (cfs)**		3.49 cfs
				TOTAL FLOW (gpm)		1564.18 gpm

Kootenai Impoundment Drain Channel May 8
Worksheet for Irregular Channel

Project Description	
Project File	\\b3\admin\document\job files\jobs\r\r_56_01\documents\kootenai.fm2
Worksheet	Kootenai Drain Channel
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Channel Slope	0.002660	ft/ft
Water Surface Elevation	0.80	ft

Elevation range: 0.00 ft to 1.30 ft.

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	1.30	0.00	0.50	0.040
0.50	0.80	0.50	1.50	0.038
1.00	0.50	1.50	4.00	0.028
1.50	0.20	4.00	5.50	0.038
2.00	0.10			
2.50	0.00			
3.00	0.10			
3.50	0.10			
4.00	0.30			
5.00	0.50			
5.50	1.30			

Results		
Wtd. Mannings Coefficient	0.033	
Discharge	3.48	cfs
Flow Area	2.45	ft²
Wetted Perimeter	5.11	ft
Top Width	4.69	ft
Height	0.80	ft
Critical Depth	0.50	ft
Critical Slope	0.023943	ft/ft
Velocity	1.42	ft/s
Velocity Head	0.03	ft
Specific Energy	0.83	ft
Froude Number	0.35	
Flow is subcritical.		

KID Drain Channel
Rating Table for Irregular Channel

Project Description	
Project File	\\b3\admin\document\job files\jobs\r\r_56_01\documents\kootenai.fm2
Worksheet	Kootenai Drain Channel
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Constant Data	
Channel Slope	0.002660 ft/ft

Input Data			
	Minimum	Maximum	Increment
Water Surface Elevation	0.70	2.00	0.05 ft

Rating Table

Water Surface Elevation (ft)	Wtd. Mannings Coefficient	Discharge (cfs)
0.70	0.033	2.60
0.75	0.033	3.02
0.80	0.033	3.48
0.85	0.033	3.97
0.90	0.032	4.74
0.95	0.034	5.02
1.00	0.034	5.58
1.05	0.034	6.17
1.10	0.034	6.78
1.15	0.034	7.41
1.20	0.034	8.07
1.25	0.034	8.74
1.30	0.034	9.44
1.35	0.034	10.21
1.40	0.034	10.98
1.45	0.035	11.78
1.50	0.035	12.58
1.55	0.035	13.39
1.60	0.035	14.22
1.65	0.035	15.06
1.70	0.035	15.90
1.75	0.035	16.76
1.80	0.035	17.62
1.85	0.035	18.49
1.90	0.035	19.37
1.95	0.035	20.26
2.00	0.035	21.16

Curve
Plotted Curves for Irregular Channel

Project Description	
Project File	\\b3\admin\document\job files\jobs\r\r_56_01\documents\kootenai.fm2
Worksheet	Kootenai Drain Channel
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Constant Data	
Channel Slope	0.002660 ft/ft

Input Data			
	Minimum	Maximum	Increment
Water Surface Elevation	0.00	1.30	0.01 ft

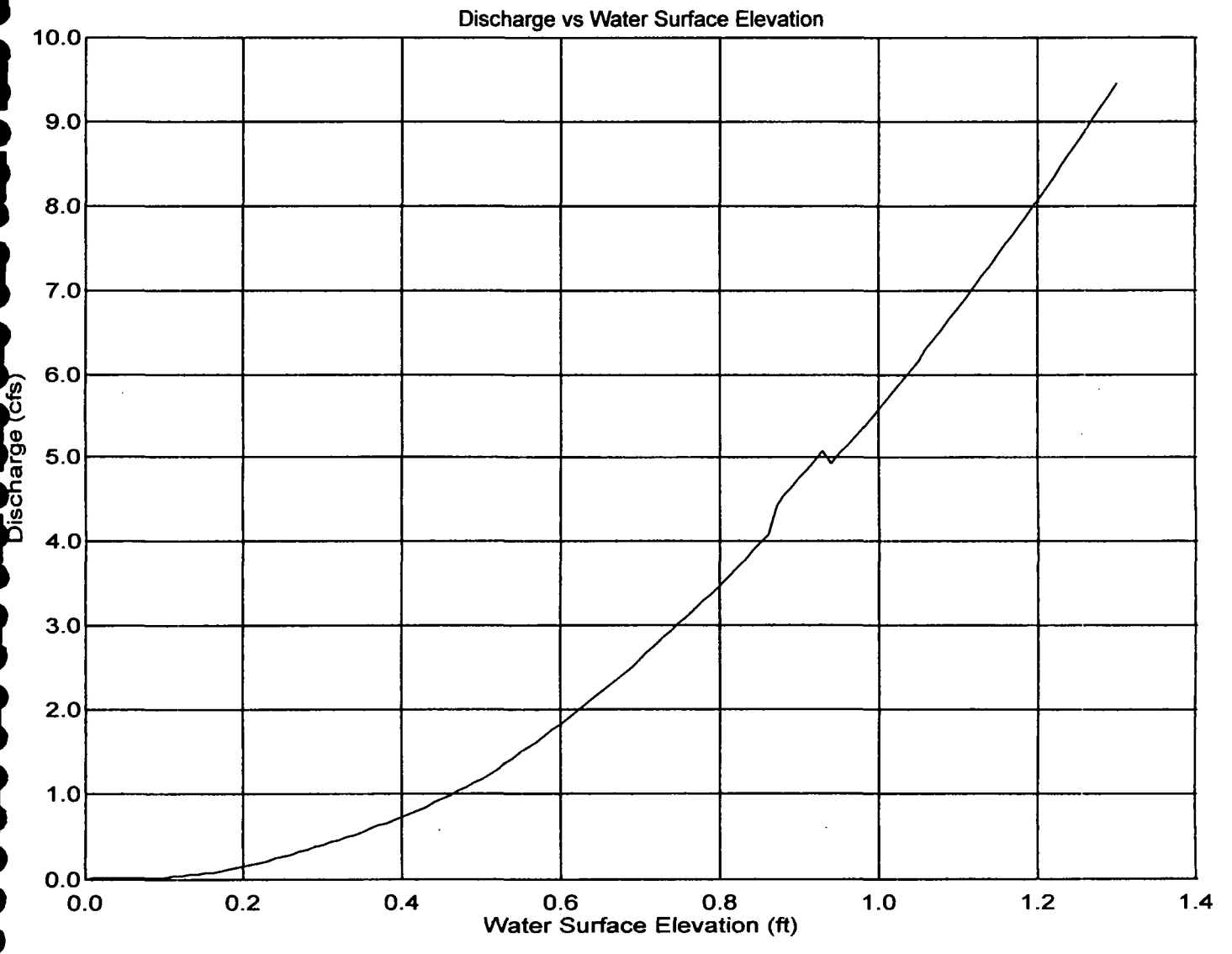


EXHIBIT 5

EMERGENCY ACTION PLAN UPDATES E5-1 TO E5-6

TRASH RACK DESIGN E5-7

FIGURE 1
KOOTENAI DEVELOPMENT IMPOUNDMENT DAM
ACTUAL OR IMMINENT FAILURE
"NOTIFICATION FLOW CHART"

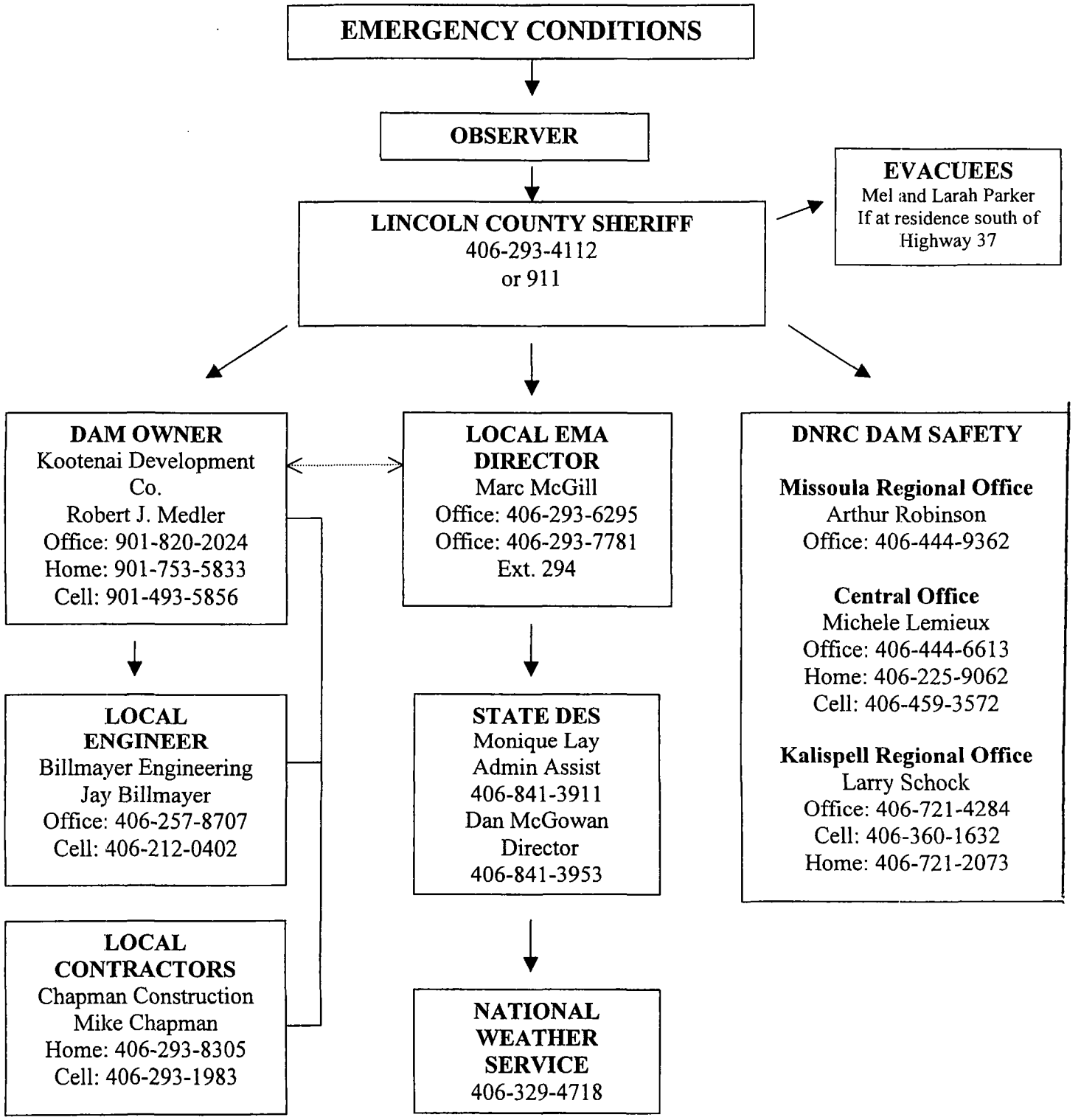
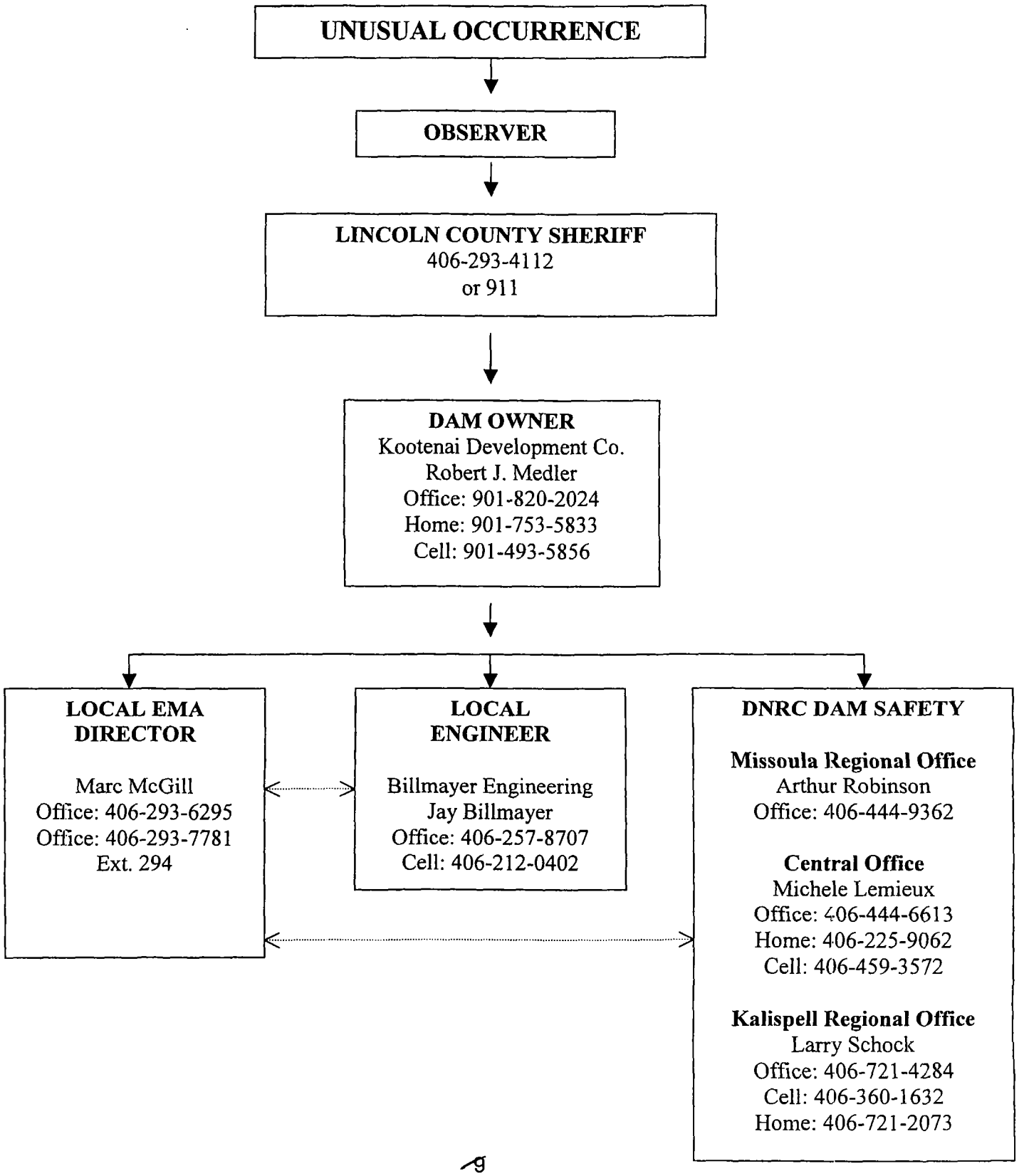


FIGURE 2
KOOTENAI DEVELOPMENT IMPOUNDMENT DAM
POTENTIALLY HAZARDOUS SITUATION
"NOTIFICATION FLOW CHART"



B. Emergency Supplies and Resources

Granite Concrete
525 Spencer Road
Libby, Montana
406-293-3777

Western Building Center
2131 Hwy 2 W
Libby, Montana
406-293-7755

Suitable soil for emergency repairs exist in the vicinity of the Impoundment Dam area, less than a ¼ mile downstream of the dam. A pit is located on the northwest side of the road with both silty clay soils that has a low permeability. There is also sand and gravel available in the pit. Ballast rock is available from the abandoned and reclaimed vermiculite mining site northeast of the dam.

C. Local Contractors and Engineers

Local Contractors:

Chapman Construction
Mike Chapman
Home: 406-293-8305
Cell: 406-293-1983

Engineer:

Billmayer Engineering
Jay Billmayer
2191 Third Ave., East
Kalispell, MT 59901

APPENDIX C
TELEPHONE DIRECTORY

A. Priority One

1. SHERIFF Lincoln County.....911 or 406-293-4112

2. EMERGENCY MANAGEMENT AGENCY Lincoln County

Marc McGill.....Office: 406-293-6295
.....Office: 406-293-7781 Ext 294

State Disaster and Emergency Services (Helena).....406-841-3911

3. EVACUEES (in upstream-to-downstream sequence)

Mel & Larah Parker.....293-9705

B. Priority Two

4. LOCAL ENGINEER

Billmayer Engineering

Jay Billmayer.....406-257-8707
.....406-212-0402

5. MONTANA DEPT. OF NATURAL RESOURCES & CONSERVATION

Larry Schock, Regional Engineer.....Office:721-4284
.....Cell: 360-1632
.....Home: 721-2073

Michele Lemieux, Dam Safety Program Manager.....Office: 444-6613
.....Cell: 459-3572
.....Home: 225-9062

Laurence Siroky, Water Operations Bureau Chief.....Office: 444-6816
.....Cell: 431-7475
.....Home: 442-2806

STANDARD OPERATING PROCEDURES
DISTRIBUTION LIST

Mike Chapman
CHAPMAN CONSTRUCTION
P. O. Box 516
Libby, MT 59923

William Corcoran, President
KOOTENAI DEVELOPMENT COMPANY
7500 Grace Drive
Columbia, MD 21044

Billmayer Engineering
Jay Billmayer
2191 Third Ave., East
Kalispell, MT 59901

Arthur Robinson
MONTANA DEPARTMENT OF NATURAL RESOURCES & CONSERVATION
KALISPELL REGIONAL OFFICE
109 Cooperative Way, Suite 110
Kalispell, MT 59901-2387

Michelle Lemieux
MONTANA DAM SAFETY PROGRAM
DEPARTMENT OF NATURAL RESOURCES & CONSERVATION
P. O. Box 201601
Helena, MT 59620-1601

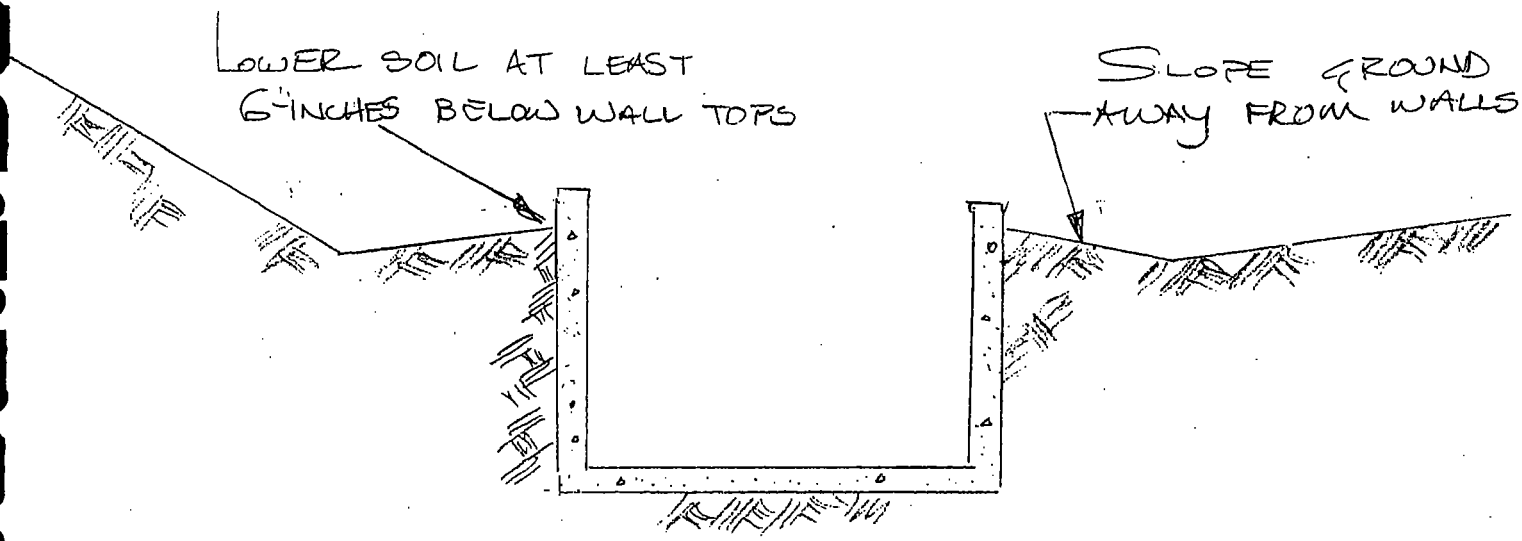
Marc McGill, Director
EMERGENCY MANAGEMENT AGENCY
952 East Spruce
Libby, MT 59923

Robert Medler
REMEDIUM GROUP, INC.
6401 Poplar Ave., Suite 301
Memphis, TN 38119

STANDARD OPERATING PROCEDURES
DISTRIBUTION LIST

Sheriff
LINCOLN COUNTY MONTANA
512 California Avenue
Libby, MT 59923

Mike Knutson
MONTANA DEPARTMENT OF NATURAL RESOURCES & CONSERVATION
P. O. Box 201601
Helena, MT 59620-1601



KOOTENAI IMPOUNDMENT DAM

OPEN CHUTE SPILLWAY REGRADING PLAN

Division of Water

FACT SHEET 03-13 8-28-03

Dam Safety: Design and Maintenance of Trash Racks

For Pipe and Riser Spillways

The principal spillway for dams in the State of Indiana can be one of several designs. The proper operation of these spillways is an important part of maintaining the overall safety of the dam. Pipe and riser, drop inlet, and slant pipe spillways are susceptible to obstruction and damage by floating debris such as leaves, branches, and logs. One device used to ensure that these spillways operate correctly is a trashrack. Trashracks are designed to keep trash and other debris from entering the spillway and causing damage.

Common problems

Trashracks usually become plugged because the openings are too small or the head loss at the inlet causes material and sediment to settle out and accumulate. Small openings will cause debris such as twigs and leaves to accumulate on the trashrack bars. This buildup will cause progressively larger debris to accumulate against the trashrack bars. Ultimately, this will result in the complete blockage of the spillway inlet.

Pipe and riser spillways can also become blocked by a build up of debris in the spillway. This type of blockage occurs when no trashrack is in place, or if the openings are too large.

In many spillway systems, the size of the outlet conduit is smaller than the size of the inlet. Therefore, it is incorrect to assume that debris which passes through the inlet will not obstruct the low through the outlet. Large debris, such as logs and tree limbs, can become lodged in the transitions in the spillway. This reduces the capacity of the spillway and could cause damage. An obstructed outlet pipe can be a major problem because removal of large debris from inside the spillway can be very difficult.

A partially blocked spillway reduces the capacity of the spillway and may also create a higher than normal pool level. The combination of these two factors can dramatically reduce the discharge/storage capacity of the dam. A reduction in the discharge/storage capacity of a dam increases the likelihood that the dam will be overtopped during a severe storm event. Overtopping for even a short period of time can cause damage to the embankment and possibly failure of the dam. If the dam has an emergency spillway, a blocked principal spillway will cause more frequent flows in the emergency spillway. Since emergency spillways are usually grass lined channels designed for infrequent flows of short duration, serious damage is likely to result.

Trash Rack Design

A well-designed trash rack will stop large debris that could plug the conduit but allow unrestricted passage of water and smaller debris. The larger the outlet conduit, the larger the trashrack opening should be. In the design of a trashrack, the openings should be sized so that they measure

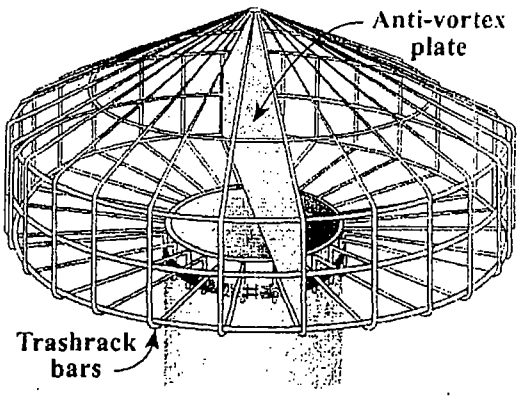


Figure 1 – Trash rack design

one-half the nominal dimension of the outlet conduit. For example, if the outlet pipe is 18 inches in diameter, the trashrack openings should be the effective equivalent of 9 inches by 9 inches; if the outlet conduit is 3 feet by 5 feet, the trashrack openings should be the effective equivalent of 18 inches by 18 inches. This rule applies up to a maximum trashrack opening of two

E5-8